

# Operating and Service Manual

---

MODEL

10W1000M7

PART NUMBER

1003001-501

SERIAL NUMBER

10359

FORM 144 REV 1087



Souderton, PA 18964-9990 USA

TEL 215-723-8181 TWX 510-661-6094 FAX 215-723-5688

## TABLE OF CONTENTS

SECTION I:	GENERAL INFORMATION	
	1.1 General Description.....	1-1
	1.2 Power Supplies.....	1-1
	1.3 Specifications.....	1-1
SECTION II:	OPERATING INSTRUCTIONS	
	2.1 General.....	2-1
	2.2 Amplifier Operations.....	2-2
SECTION III:	THEORY OF OPERATION	
	3.1 Introduction.....	3-1
	3.2 Amplifier Section.....	3-1
	3.3 Power Supply.....	3-2
SECTION IV:	MAINTENANCE	
	4.1 General Maintenance.....	4-1
	4.2 Disassembly Procedure.....	4-1
	4.3 Troubleshooting.....	4-2
	4.4 Servicing Etched Circuit Boards.....	4-2
SECTION V:	REPLACEABLE PARTS	
	5.1 Introduction.....	5-1
	5.2 Ordering Information.....	5-1
	5.3 Nonlisted Parts.....	5-1
	5.4 Circuit Designators.....	5-1
	5.5 Manufacturers' Abbreviation Listing.....	5-3
	5.6 Master List.....	5-3
	5.7 Schematics and Bills of Material.....	5-3

SECTION I  
GENERAL INFORMATION

1.1        GENERAL DESCRIPTION

The Model 10W1000M7 Amplifier is a self-contained, broadband unit designed for laboratory applications where instantaneous bandwidth, high gain, and moderate power output are required. Solid state technology is used exclusively to offer significant advantages in reliability and cost. A Model 10W1000M7 used with a frequency swept signal source will provide 8 watts of linear swept power output from 100-1000 MHz. Typical applications include antenna and component testing, wattmeter calibration, EMI susceptibility testing, use as a driver for frequency multipliers and high power amplifiers and as an RF source for magnetic resonance imaging studies.

1.2        POWER SUPPLIES

This unit has a self-contained 120/240 VAC, 50/60 Hz, regulated power supply. The power consumption is a nominal 225 watts. Primary circuit fusing is provided.

1.3        SPECIFICATIONS

Refer to Amplifier Research Data Sheet on next page for detailed specifications.

## SECTION II

### OPERATING INSTRUCTIONS

#### 2.1 GENERAL

Operation of the Model 10W1000M7 broadband amplifier is quite simple. The input signal, whether swept or fixed in frequency, is fed into the jack marked INPUT and the amplifier output signal is taken from the jack labeled OUTPUT. The unit is turned ON by activating the power switch. In the event of a unit malfunction, protection is provided by fusing located at the rear of the unit. A polarized, three (3) wire AC power cord is also included with the unit to provide cabinet and chassis grounding to the power mains.

#### CAUTION:

THE MODEL 10W1000M7 AMPLIFIER IS NOT CRITICAL IN REGARDS TO SOURCE AND LOAD VSWR AND WILL REMAIN UNCONDITIONALLY STABLE WITH ANY MAGNITUDE AND PHASE OF SOURCE AND LOAD VSWR. IT ALSO HAS BEEN DESIGNED TO WITHSTAND, WITHOUT DAMAGE, RF INPUT POWER UP TO TWENTY (20) TIMES ITS RATED INPUT OF 1mW: HOWEVER, SIGNAL LEVELS HIGHER THAN 20 mW OR TRANSIENTS WITH HIGH PEAK VOLTAGES CAN DAMAGE THE AMPLIFIER. ALSO, ACCIDENTAL CONNECTION OF THE 10W1000M7 OUTPUT TO THE INPUT CAUSES OSCILLATIONS WHICH WILL PERMANENTLY DAMAGE THE INPUT TRANSISTOR. INTERNAL CROWBAR PROTECTION IS DESIGNED INTO THE AMPLIFIER TO PROTECT AGAINST INPUT OVERDRIVE.

#### NOTE:

ALTHOUGH DESIGNED FOR OVERDRIVE AND LOAD TOLERANCE DESCRIBED ABOVE SUBJECTING THE AMPLIFIER TO THESE CONDITIONS SIMULTANEOUSLY CAN CAUSE FAILURE OF THE OUTPUT TRANSISTOR. REPEATED FAILURES OF THIS NATURE WILL NOT BE COVERED UNDER WARRANTY.

The Amplifier is protected by the fast acting Crowbar circuit. The Crowbar may be activated by an input signal greater than required for full output power. When the input signal reaches a level that may cause damage to the amplifier power stages, the 28 volt power supply is turned OFF and the red Overload light on the panel is activated. Typically, the input level required to activate the Crowbar is approximately +1 to +3 dBm.

To reset the Crowbar, reduce the input RF to 0 dBm or lower, and push the Reset switch (S3) located by the Overload light on the front panel.

## 2.2 AMPLIFIER OPERATION

Figure 2.1 shows the Model 10W1000M7 Amplifier in pictorial form.

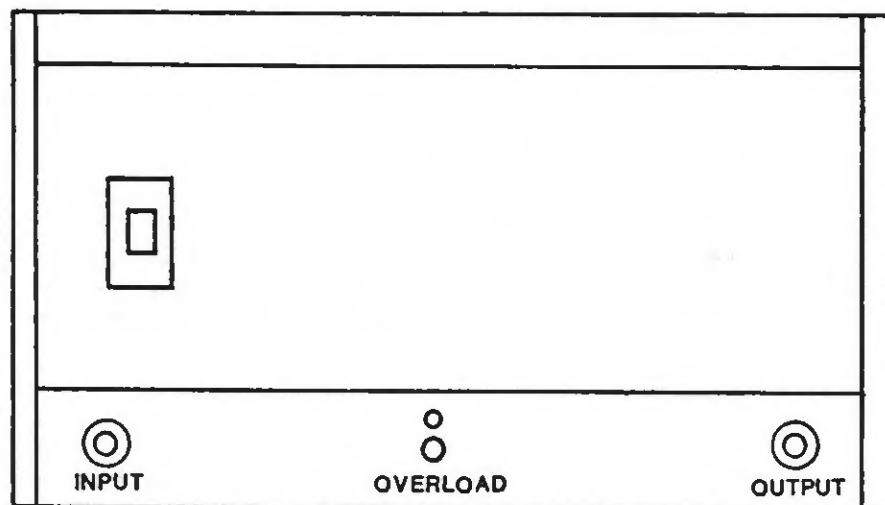


FIGURE 2.1  
AMPLIFIER OPERATION

### Turn On Sequence:

1. Connect input signal to INPUT connector.
2. Connect load to OUTPUT connector.
3. Select either 120/240 VAC operation by means of switch located on rear of unit.
4. Activate power switch to ON position. A red indicator light mounted within the switch will light when power is applied.

### CAUTION:

DO NOT CONNECT UNIT TO 240 VAC MEASURED LINE TO LINE. TO DO SO WOULD RESULT IN ONE SIDE OF THE LINE NOT BEING FUSED, CREATING A HAZARDOUS SITUATION. THE 240 VAC FEATURE IS DESIGNED PRIMARILY FOR USE IN COUNTRIES HAVING 240 VAC MEASURED LINE TO NEUTRAL.

## SECTION III

### THEORY OF OPERATION

#### 3.1 INTRODUCTION

The Model 10W1000M7 Amplifier consists essentially of five (5) cascaded stages of broadband transistor amplifiers and a push-pull stage which yields a total power gain greater than 8 dB. Input and output matching networks are utilized to provide optimum power transfer of the signal to and from the amplifier with a 50 ohm source and load impedance. Intra-stage feedback is also used to further flatten the frequency response and bias stabilization of the individual stages is provided.

The self-contained power supply employs a full wave rectifier, two (2) integrated circuit regulators to provide stable, low ripple, regulated output voltages.

#### 3.2 AMPLIFIER OPERATION

Refer to Schematic Diagrams No. 1003010 and 1003009

The input signal to the amplifier is fed from the input connector through a signal limiter, directional coupler, and then to the base of the first transistor amplifier stage.

The first stage is connected in the common emitter mode with the emitter connected to ground through two resistors. This configuration allows the selection of the emitter resistors to achieve the desired stage gain. the collector voltage (+) is supplied to this stage from the transistor immediately above it. This allows the RF transistor to operate at a constant DC current and provides a high degree of protection since the transistor current is independent of overdrive and/or short circuits. Temperature dependence is also avoided. The required decoupling and bypassing of the positive supply is provided by ferrite beads and capacitors.

A coupling network is used to route the output of the first stage to the base of the second stage. the first five stages are coupled in substantially the same manner with the fifth stage matched to a 50 ohm output impedance.

The output of the fifth stage is applied through an input matching network to the final output push-pull amplifier. The output of the push-pull amplifier is matched through a ferrite transformer to the 50 ohm output. Q1 and Q3 are bias stages for Q2 and help Q2 to operate at a constant DC current.

### 3.3 POWER SUPPLY SECTION

Refer to Schematic Diagrams No. 1001100, 1001098, 101507 and 1001132.

Input AC power is fed through RFI filter FL1 before being switched by the main power switch, S1. The AC power indicator is an integral part of S1. S2 serves to select the primary tap configuration of T1 for operation on either 120 or 240 VAC.

#### CAUTION:

DO NOT CONNECT UNIT TO 240 VAC MEASURED LINE TO LINE. TO DO SO WOULD RESULT IN ONE SIDE OF THE LINE NOT BEING FUSED, CREATING A HAZARDOUS SITUATION. THE 240 VAC FEATURE IS DESIGNED PRIMARILY FOR USE IN COUNTRIES HAVE 240 VAC MEASURED LINE TO NEUTRAL.

The power supply utilizes a full wave rectifier on A1 and A3 assemblies. DC output from the rectifiers is filtered by C1. A1 supplies regulated +VDC to the low level amplifier and A3 supplies regulated +VDC to the Final Amplifier. The A3 supply uses a pre-regulator mounted over the fan to compensate NL/FL fluctuations. The A3 regulator also uses a parallel pass transistor mounted on a bracket above the fan. This pass transistor increases the current capability of the A3 regulator which is necessary to power the Final Amplifier. A1 supplies +VDC to the protection circuit assembly, A2.

#### 3.3.1 Regulator MPLV

##### 3.3.1.1 Regulator A3

Refer to Schematic Diagram No. 1001098.

The full wave rectifier consists of CR1 and CR2. Capacitors C1 and C2 are connected in parallel across the rectifiers to suppress transients caused by the reverse recovery of the diodes. The filtered DC output from the rectifiers pass through the pre-regulator and current boost transistor located external to regulator assembly and series regulator U1. U1 is a linear integrated circuit with adjustable output current and voltage. R2 adjusts the output current and R3 adjusts the output voltage. U1 also contains power limiting, thermal shutdown and input overvoltage protection.

The overload light DS2 is located on the front panel and will light when regulated VDC approaches zero. A crowbar will cause DS2 to light and must be reset to restore proper operation. To reset the crowbar, reduce the input to OdBm or less and push the red switch (S3) located under the overload light on the front panel.

### 3.3.1.2 Regulator A1

Refer to Schematic Diagram No. 1001507.

The full wave rectifier consists of CR1 and CR2. Capacitors C1 and C2 are connected in parallel across the rectifiers to suppress transients caused by the reverse recovery of the diodes. The filtered DC output from the rectifiers pass through the pre-regulator (Q2) located external to regulator assembly and series regulator U1. U1 is a linear integrated circuit with adjustable output current and voltage. R2 adjusts the output current and R3 adjusts the output voltage. U1 also contains power limiting, thermal shutdown and input overvoltage protection.

R1 and VR1 output voltage goes to DS2 and protection circuit.

### 3.3.2 Protection Circuit

Refer to Schematic Diagram No. 1001132.

The Protection Circuit consists of a DC amplifier U1 with its bias circuit, an SCR crowbar Q2, and optical coupler U2. The input signal at E2 originates from a peak detector which detects the RF input level and delivers an equivalent DC potential to the DC amplifier. The input signal is amplified to the desired level. R15 adjusts the threshold setting which turns ON Q2. With Q2 turned ON, the +28VDC at E5 is pulled close to ground and the A1 regulator output is near zero thus removing the DC power to the driver amplifier. Holding current is supplied to E1 from the A1 regulator, through R8 and CR2 and Q2 anode. Thus when Q2 turns ON, it stays ON until the RF amplifier is reset. To reset, reduce the input RF to 0dBm or less and push the red switch (S3) located on the front panel.

The Optical Coupler U2 is used to sense when any Driver or Final regulator output voltage has decreased below a preset value. Should this happen, the output of the Optical Coupler (U2) will turn Q2 ON and cause the RF to the Driver and Final amplifiers to turn OFF, thus protecting the output circuits. The red overload light on the front panel will light. To reset, reduce the input to 0dBm or less and push S3 located on the front panel.

## SECTION IV

### MAINTENANCE

#### 4.1 GENERAL MAINTENANCE INFORMATION

The Model 10W1000M7 should require very little maintenance since it is a relatively simple instrument. It is built with etched circuit wiring and solid state devices which should ensure long, trouble-free life. However, should trouble occur special care must be taken in servicing to avoid damage to the devices or the etched circuit board.

Since the components are soldered in place, substitution of components should not be resorted to unless there is some indication that they are faulty. In addition, take care when troubleshooting, not to short voltages across the amplifier. Small bias changes may ruin the amplifier due to excessive dissipation or transients.

Components within Amplifier Research instruments are conservatively operated to provide maximum instrument reliability. In spite of this, parts within an instrument may fail. Usually, the instrument must be immediately repaired with a minimum of "down time". A systematic approach can greatly simplify and thereby speed up the repair.

However, due to the importance of the amplifier's alignment, it is recommended that when failure is caused by breakdown of any of the components in the signal circuits, the amplifier be returned to the factory for part replacement and amplifier realignment. Shipping instructions are as follows: Ship PREPAID via United Parcel Service to Amplifier Research Corporation, 160 School House Road, Souderton, PA 18964 USA.

#### 4.2 COVER AND CIRCUIT BOARD REMOVAL

##### CAUTION:

REMOVE POWER CORD FROM RECEPTACLE BEFORE SERVICING.

4.2.1 Remove top cover by removing the six screws.

4.2.1 Remove circuit board and heatsink by removing the four flathead screws holding it in the housing; (two screws on each side cover).

#### 4.3 TROUBLESHOOTING

The techniques used in troubleshooting solid state instruments are similar to those used in vacuum tube instruments. For instance, a good way to start troubleshooting is to check the supply voltage at the amplifier supply voltage terminal. If it is low or nonexistent, check the power supply components starting with the AC fuses.

The power supply output voltage should be nominally +28 volts. Incorrect voltage could result in over dissipation of the transistors or severe distortion and non-linearity of the amplifier. The power supply may be disconnected from the RF board to enable troubleshooting without danger of damaging the RF board. The amplifier board should be removed (Section 4.2) and the power supply output connected to the 25 ohm, 50 watt resistor to simulate the amplifier load.

Finally, determine if the individual amplifier stages are operational by injecting a signal into the transistor base and looking for an indication of output.

#### 4.4 SERVICING ETCHED CIRCUIT BOARDS

When soldering leads, use a hot forty watt or smaller iron. Apply heat sparingly to the leads, not to the printed wiring on the board. Before installing new parts, clean holes to receive new part without forcing. Have new leads tinned to receive solder quickly with a minimum of heat and without residue.

SECTION V  
REPLACEABLE PARTS

5.1 INTRODUCTION

This section contains information for ordering replacement parts. Information is provided for obtaining parts through Amplifier Research, and or from the manufacturer of the part. Included in this section are the following:

- Ordering information
- Nonlisted parts
- Circuit designators
- Manufacturers' abbreviation listing
- Master list
- Schematics and Bills of Material

5.2 ORDERING INFORMATION

To obtain replacement parts, address order to Amplifier Research, 160 School House Road, Souderton, PA 18964 USA. Identify and include instrument model and serial numbers.

TEL : 215-723-8181  
TWX : 510-661-6094  
FAX : 215-723-5688

5.3 NONLISTED PARTS

To obtain a part that is not listed, include:

- a. Instrument model number
- b. Instrument serial number
- c. Description of the part
- d. Function and location of the part

5.4 CIRCUIT DESIGNATORS

REF= reference document

A = assembly

B = fan

BT = battery

C = capacitor

CB = circuit breaker

CR = diode  
DL = delay line  
DS = lamp  
E = terminal  
F = fuse  
FL = filter  
J = connector, recept  
K = relay  
L = inductor  
M = meter  
P = connector, plug  
Q = transistor, semiconductor  
R = resistor, potentiometer  
RT = temperature sensing element  
S = switch  
T = transformer  
TB = terminal block  
TP = test point  
U = integrated circuit  
V = vacuum tube, neon bulb, photocell, etc.  
VR = zener diode  
W = wire, cable  
X = socket  
Y = crystal unit

## 5.5 MANUFACTURERS' ABBREVIATION LISTING

This section contains a list of manufacturers' abbreviations. These abbreviations appear under the drawing number column on the bills of material. The three letters or symbols before the backward slash represent the name of the manufacturer. The number after the backward slash represents the manufacturer's part number. See appendix A for complete listing of manufacturers' abbreviations.

## 5.6 MASTER LIST

The master list provides the user with a quick view of the major assemblies of a unit. The assemblies are displayed in an indented format with the corresponding schematic shown in the right column.

## 5.7 SCHEMATICS and BILLS of MATERIAL

The schematics and bills of material are arranged in sequence according to the master list. The schematic which appears first on the master list also appears first in the schematic and bill of material section. Following each schematic are the appropriate bills of material relating to the schematic. This pattern will be repeated throughout this section.

The bills of material used in this manual are computer generated. Each computer part number appears only once on a bill of material along with the total quantity used, and all of the applicable circuit designators. The bills of material are designed to organize the parts in alphanumeric order of their circuit designators. Typical manufacturer part numbers can be found in the drawing number column. The manufacturer's abbreviation appears first, separated by a backward slash, which is followed by the part number.

Amplifier Research has assigned computer product numbers to all parts in inventory. The computer product numbers are located on the left side of the bill of material in the part number field. When referencing or ordering parts from Amplifier Research, it is best to use the computer product number. Parts may also be ordered directly from the manufacturer using the manufacturer's part number if desired.

STANDARD ABBREVIATIONS FOR MANUFACTURERS - APPENDIX A REV X

AAV.....AAVID  
ABB.....ABBEON  
ACA.....ANTENNA CORPORATION OF AMERICA  
ACO.....ARCO  
ADA.....ADALET  
AEC.....ARNOLD ENGINEERING COMPANY  
AEP.....APPLIED ENGINEERING PRODUCTS  
AER.....AEROQUIP  
AHC.....AIRLINE HYDRAULICS CORPORATION  
AIN.....AIN PLASTICS  
AIR.....AIRPAX  
AIT.....AERITALIA  
ALC.....ALCO  
ALE.....ALLIED ELECTRONICS  
ALI.....ASTROLAB INCORPORATED  
ALP.....ALPHA  
AMA.....AMATOM  
AMC.....AMPEX CORPORATION  
AMH.....AMPHENOL  
AMI.....AMPLIFONIX INCORPORATED  
AMP.....AMP INCORPORATED  
AMR.....AMREP  
AMS.....AMERICAN STANDARD  
APG.....AP-O-GEE INDUSTRIES  
APN.....AMERICAN PRECISION  
APO.....AMPROBE  
APP.....A.P. PRODUCTS INCORPORATED  
APR.....AMPERITE  
APX.....AMPEREX  
ARC.....AMPLIFIER RESEARCH CORPORATION  
ARE.....ARROW ELECTRONICS  
ARO.....AROMAT CORPORATION  
ARP....APPLE RUBBER PRODUCTS INCORPORATED  
ASB.....ASTRO-BUBBLES  
ASC.....AMERICAN SWITCH CORPORATION  
ASD.....AMERICAN STANDARD  
ASP.....ASSOCIATED SPRING  
ATL.....ATLEE  
AVA.....AVA CORPORATION  
AVF.....ALLENTOWN VALVE & FITTING COMPANY  
AVX.....AVX CORPORATION  
A-B.....ALLEN BRADLEY  
A-M.....AEC MAGNETICS  
A-S.....ALCOSWITCH  
A-T.....AHAM-TOR

STANDARD ABBREVIATIONS FOR MANUFACTURERS - APPENDIX A REV X

BBI.....BARON-BLAKESLEE INCORPORATED  
BDX.....BENDIX  
BEL.....BELDEN  
BEY.....BEY ELECTRIC  
BFI.....BUCKEYE FORGE INCORPORATED  
BKM.....BECKMAN  
BOK.....BOKER'S INCORPORATED  
BOP.....BOPLA ENCLOSURES  
BOR.....BOURNS  
BUD.....BUD COMPANY  
BUS.....BUSS  
B-C.....BONCO CORPORATION  
B-E.....BRIM ELECTRONICS  
B-T.....BEAU-TECH  
B-V.....BEAU/VERNITRON  
CAD.....CADDOCK  
CAM.....CAMBION  
CAN.....CANNON  
CAP.....CANPACK  
CAR.....CARLING  
CCI.....CRL COMPONENTS INCORPORATED  
CDI.....COAXIAL DYNAMICS INCORPORATED  
CEN.....CENTURY ELECTRONICS  
CES.....COUNTY ELECTRIC SUPPLY COMPANY  
CHE.....CHERRY  
CHR.....CONNECTICUT HARD RUBBER  
CIN.....CINCB  
CJS.....CENTRAL JERSEY SCREW & BOLT  
CKS.....C & K COMPONENTS INCORPORATED  
CLA.....CLAROSTAT  
CLC.....CBICAGO LOCK COMPANY  
CMI.....CERAMIC MAGNETICS INCORPORATED  
CMP.....COMMERCIAL PLASTICS  
CNF.....CINCINNATI FAN  
COE.....COMP ENTERPRISES  
COL.....COLDER PRODUCTS  
COM.....COMPUCON  
CON.....CONCORD ELECTRONICS  
COP.....COMPLETE PACKAGING  
COR.....CORCOM  
CPC.....C.P. CLARE  
CPL.....COMPULITE  
CPS.....COLOR PRINT SCREENING  
CRC.....CRC CHEMICALS  
CRL.....CENTRALAB

STANDARD ABBREVIATIONS FOR MANUFACTURERS - APPENDIX A REV X

CTS.....CTS  
CUS.....CUSTOM  
C-D.....CORNELL-DUBILIER  
C-E.....CORNING ELECTRONICS  
C-P.....CAPLUG COMPANY  
C-T.....CANADIAN THERMOSTATS  
DAL.....DALE  
DAY.....DAYTON  
DEN.....DENNISON  
DIA.....DIALIGHT  
DIL.....DIELECTRIC LABS  
DKK.....DOW KEY/KILOVAC  
DSC.....DE-STA-CO  
DTP.....DOYLESTOWN PRINTING  
D-E.....DABURN ELECTRONICS  
D-G.....DIMCO-GRAY  
D-K.....DIGI-KEY CORPORATION  
ECO.....EATON CORPORATION  
EFG.....E.F. JOHNSON  
EGL.....ELGAL  
EIC.....ELECTRO INSULATION CORPORATION  
EIM.....EIMAC  
ELM.....ELMENCO  
ELR.....ENGLER INSTRUMENT  
EMC.....E.M.C. TECHNOLOGY  
EMM.....ENGELMANN MICROWAVE  
EOD.....ELECTRO-OPTIC DEV  
ERI.....ERIE TECHNOLOGY PRODUCTS  
ERM.....EREM CORPORATION  
ESX.....ESSEX  
ETA.....ETA  
EVE.....EVEREST ELECTRONIC EQUIPMENT  
EVR.....EVEREADY  
EWS.....ELMWOOD SENSOR  
E-C.....EMERSON AND CUMMING  
FCH.....FAIRCHILD  
FCI.....FILTER CONCEPTS INCORPORATED  
FER.....FERRONICS  
FEX.....FERROXCUBE  
FLO...FLO TRAN PNEU-DRAULICS INCORPORATED  
FOS.....FIBRE OPTIC COMMUNICATION  
                    SPECIALISTS  
FRK.....FROST KING  
FRM.....FREEDMAN/MALTA  
FRP.....FAIR-RITE PRODUCTS  
FWC.....FW CAPACITORS  
F-S.....FASTENER SPECIALTY

STANDARD ABBREVIATIONS FOR MANUFACTURERS - APPENDIX A REV X

GAL.....GALLAGER  
GCE.....G.C. ELECTRONICS  
GEM.....GEM  
GOL.....GOLDKAMP  
GRA.....GRAINGER  
GRE.....GREYARC  
GRS.....GENERAL RADIO SUPPLY  
GSI.....GSI  
GTL.....GILWAY TECHNICAL LAMP  
G-E.....GENERAL ELECTRIC COMPANY  
G-I.....GENERAL INSTRUMENT  
HAD.....HARRY DAVIES  
HAN.....HANSON  
HAV.....HAVERHILL CABLE AND MANUFACTURING  
HDB.....HOMER D. BRONSON  
HEC.....HIGH ENERGY CORPORATION  
HEI.....HEINEMANN  
HEX.....HEXACON  
HHS.....H.H. SMITH  
HIM.....HITACHI MAGNETICS  
HMF.....HILTON MANUFACTURING  
HMN.....HENRY MANN  
HOL.....HOLLINGSWORTH  
HOW.....HONEYWELL  
HPC.....H.P. CADWALLADER  
HSI.....HUBER & SUHNER INCORPORATED  
HUB.....HUBBEL  
HUC.....HUDSON CAN COMPANY  
HWK.....HAWKINS METAL FABRICATION  
H-P.....HEWLETT/PACKARD  
H-R.....HERBACH & RADEMAN  
IBM.....IBM  
ICI.....ILLINOIS CAPACITOR INCORPORATED  
IDE.....IDEAL  
IER.....IERC  
ILS.....ILSCO  
IMB.....IMB  
IMC.....IMC  
INC.....INTERNATIONAL CRYSTAL MFG COMPANY  
INM.....INMET  
IPI.....INSULFAB PLASTICS INCORPORATED  
IRC...INTERNATIONAL RECTIFIER CORPORATION  
IRM.....IR-CRYDOM  
ITF.....INTERFAN  
ITJ.....ITT-JENNINGS  
ITT.....ITT CANNON  
I-E.....IMPERIAL EASTMAN  
I-G.....INDIANA GENERAL  
I-S.....INSTRUMENT SPECIALTIES

STANDARD ABBREVIATIONS FOR MANUFACTURERS - APPENDIX A REV X

JAR.....J.A. REINHARDT  
JDE.....JOHANSON DIELECTRICS  
JFD.....JFD  
JOH.....JOHANSON  
JON.....JONATHAN MANUFACTURING  
JOR.....JORITA  
KCC.....KEYSTONE CARBON COMPANY  
KEY.....KEYSTONE ELECTRONICS  
KIN.....KINGS  
KLE.....KLEIN  
KSD.....KESTER SOLDER DIVISION  
KUL.....KULKA  
K-D.....KD COMPONENTS  
LAF.....LAFRANCE CORPORATION  
LBA.....LAMBDA ELECTRONICS INCORPORATED  
LEM.....LIAISONS ELECTRONIQUES MECHANIQUES  
LEV.....LEVITON MANUFACTURING COMPANY  
LIF.....LITTLEFUSE  
LOC.....LOCTITE CORPORATION  
LOR.....LORD CORPORATION  
MAL.....MALLORY  
MCG.....McGILL  
MCS.....McMASTER CARR SUPPLY COMPANY  
MEP.....MEPCO-ELECTRA  
MET.....METUCHEN CAPACITOR  
MFG.....MANUFACTURER  
MHW.....M.H. & W. COMPANY  
MIC.....MICROMETALS IRON POWDER CORES  
MIN.....MINI-CIRCUITS  
MIP.....MICRO PLASTICS  
MIR.....MINOR RUBBER COMPANY  
MIS.....MICROSWITCH  
MMI.....MAGNETIC METALS INCORPORATED  
MMM.....MINNESOTA MINING MANUFACTURING  
MOC.....MOCAP  
MOD.....MODUTEC  
MOL.....MOLEX  
MON.....MONSANTO  
MOS.....M/A-COM OMNI SPECTRA INCORPORATED  
MOT.....MOTOROLA  
MPC.....MULTI-PRODUCTS  
MRS.....MARSH  
MIT.....MULTITHERM CORPORATION  
MUE.....MUELLER  
MUR.....MURATA/ERIE

STANDARD ABBREVIATIONS FOR MANUFACTURERS - APPENDIX A REV X

MWA.....MICROWAVE ASSOC  
MWC.....MIDWEST COMPONENTS  
MWM.....MIDWEST MICROWAVE  
MWS.....MICROWAVE SEMI-CONDUCTORS  
M-C.....M & C SPECIALTIES  
M-E.....MASTER ELECTRICIAN  
M-M.....MILI-MAX CORPORATION  
NAB.....NORTH AMERICAN BRASS AND COPPER  
NEB.....NEBS INCORPORATED  
NET.....NETEK  
NIE.....NIELSEN HARDWARE  
NJS.....N.J. SEMI  
NMB.....NMB TECHNOLOGIES INCORPORATED  
NOB.....NOBLITT BROTHERS & COMPANY  
NPP.....NORTH PENN POLISHING & PLATING  
NSI...NATIONAL SEMI-CONDUCTOR CORPORATION  
NVS....NORTHAMPTON VALLEY SERVICE COMPANY  
N-M.....NATIONAL MOLDITE  
N-P.....NEM-PACK  
OHM.....OHMITE  
OKI.....OK INDUSTRIES  
OME.....OMEGA  
OMR.....OMRON  
OPT.....OPTIMAX  
PAE.....PACIFIC ELECTRICORD  
PAJ.....PHILLIPS AND JACOBS  
PAM.....PAMOTOR  
PAN.....PANASONIC  
PAP.....PAPST  
PBC.....POTTER & BRUMFIELD CORPORATION  
PCI.....PENN CRAFT INDUSTRIES  
PEC.....PENN CONTROLS  
PEK.....PEAK  
PEN.....PENN ENGINEERING  
PFL.....POLYFLON  
PFS.....POWER FILM SYSTEMS  
PHI.....POWER HYBRID  
PLM.....PLASTIC & METALS  
PNT.....PANDUIT  
POW.....POWEREX  
PRC.....PRECISION RUBBER COMPANY  
PSI.....POWER SEMI-CONDUCTOR INCORPORATED  
PSP.....PROJECT SUPPORT INCORPORATED  
PTC.....PRECISION TUBE COMPANY  
P-B.....PENN-BASCO

STANDARD ABBREVIATIONS FOR MANUFACTURERS - APPENDIX A REV X

QUI.....QUICKSET  
RAF.....R.A.F. ELECTRONIC HARDWARE INC  
RCA.....RCA  
RCC.....RAYCHEM CORPORATION  
RCL.....RCL  
REL.....RELIANCE MICA COMPANY  
REM.....REMTEK  
RES.....ROSE ENCLOSURES SYSTEMS  
RIC.....RICHCO  
ROG.....ROGAN  
RON.....RONCO CORPORATION  
ROS.....ROSS ENGINEERING  
ROT.....ROTRON  
ROW.....ROWLAND  
RPC.....REPUBLIC PACKAGING CORPORATION  
RUS.....RUSSELL INDUSTRIES  
R-N.....ROBINSON-NUGENT  
R-S.....RADIO SHACK  
SAG.....SAGE LABORATORIES  
SAI.....SCIENTIFIC-ATLANTA INCORPORATED  
SAM.....SAMTECH  
SBC.....SCHROEDER BROTHERS CORPORATION  
SCD.....SCHADOW  
SCH.....SCHAUER  
SCI.....SPECTRUM CONTROL INCORPORATED  
SCO.....SCOTCH  
SEM.....SEMIKRON  
SEV...SEVENTY-THREE MANUFACTURING COMPANY  
SGL.....SGL INDUSTRIES  
SGS.....SGS  
SIE.....SIEMENS  
SIM.....SIMPSON  
SLE.....SL ELECTRONICS  
SOC.....SOUTHCO  
SOE.....STANDARD OIL ENGINEERING  
SOH.....SOHIO  
SOL.....SOLDAPULIT  
SOW.....SOLDER WICK  
SPC.....SPC TECHNOLOGY  
SPE.....SPECTROL  
SPL.....SPRA-LUBE  
SPR.....SPRAGUE  
SPS.....SPRINGFIELD PAPER SPECIALISTS  
SSM.....SOLID STATE MICROWAVE  
SSS.....S & S TECH  
SST.....SST

STANDARD ABBREVIATIONS FOR MANUFACTURERS - APPENDIX A REV X

STA.....STANCOR  
STB.....SEAL-TITE BAG COMPANY  
STM.....SEASTROM MANUFACTURING COMPANY  
STP.....STACKPOLE  
STW.....STOCKWELL  
SUS.....SUNSHINE SCIENTIFIC  
SWC.....SWITCHCRAFT  
S-B.....SPEED BEND  
S-E.....STEMCO/ENGLER  
S-F.....SYDNEY FRIEDRICH  
S-L.....SWAGELOCK  
S-M.....STRIP-MASTER  
TAB.....THOMAS & BETTS  
TAI.....TAI CORPORATION  
TAN.....TANSISTOR  
TCC.....THOMSON PASSIVE COMPONENTS CORP  
TEL.....TELEFUNKEN  
TEM.....TEMPIL  
TET.....TECHNITool  
TFI.....THRUWAY FASTENERS INCORPORATED  
THM.....THERMALLOY  
THS.....THREADED SCREW PRODUCTS COMPANY  
TII.....TEXAS INSTRUMENTS INCORPORATED  
TRD.....TRIAD  
TRI.....TRI-COUNTY  
TRS.....TRI-STATE  
TRT.....TRAVERS TOOL COMPANY  
TRW.....TRW  
TXS.....TEXAS SPECTRUM  
T-P.....THOMAS PRODUCTS  
UEC.....UNITED ELECTRIC  
ULI.....ULINE  
UNC.....UNICORP  
UNE.....UNELCO  
USC.....USECO  
UTI.....UTICA  
VIC.....VICTOREEN  
VIT.....VITRAMON  
VOL.....VOLTRONICS CORPORATION  
WAK.....WAKEFIELD  
WAL.....WALDOM  
WEC.....WESTERN ENTERPRISES COMPANY  
WEI.....WEICO  
WEL.....WELLER  
WES.....WEINSTEIN  
WGV.....WARREN G-V  
WIL.....WILTRON

STANDARD ABBREVIATIONS FOR MANUFACTURERS - APPENDIX A REV X

WIS.....WEBER INDUSTRIAL SUPPLY COMPANY  
WIT.....WITTEK DIV. A MICRODOT COMPANY  
WPI.....WIRE PRODUCTS INCORPORATED  
WPS.....WORKPLACE SYSTEM  
WSC.....WEST POINT SUPPLY COMPANY  
W-E.....WELLS ELECTRONICS INCORPORATED  
W-I.....WEIDMULLER INCORPORATED  
XAC.....X-ACTO  
XCE.....XCELITE  
YNG.....YOUNGS  
YPC.....YARDLEY PRODUCTS CORPORATION  
ZER.....ZERO MANUFACTURING COMPANY  
ZIE.....ZIERIC

ML1003001-501

MODEL 10W1000M7

DESCRIPTIVE INFORMATION	SUPPORT DOCUMENTS
FREQUENCY 120-1000 MHz	TEST DATA SHEET 1000892
POWER OUT 10 Watts CW	TEST PROCEDURE 1001334
PRIMARY POWER 120/240 VAC, 50/60 Hz	ENVELOPE DWG
COOLING INTERNAL FAN	SALES DATA SHEET INFORMAIL PRINTED
PACKAGE 14.5" X 6.5 X 8.0"	MANUAL CLASS I
OPTIONS INCLUDED	REMARKS
	TECH. J.A.V. JUL 26 1990

MATERIAL PULL INFORMATION										MANUAL INFO					
ASSY LEVEL						REF	DESCRIPTION	QTY	ASSEMBLY NUMBER	S	P L	A S	S C	SCHEMATIC	
1	2	3	4	5	6	DESIG								NUMBER	S
X							COVER Kit, 14" LAB	1	1002373-501		X				
X							P.S.F HOUSING Assy	1	1002875-502		X		X	1001100	C
	X						HARNESS Assy, P.S.	1	1002500-501		X			1001100	
		X					REGULATOR Assy	1	1002823-509	B	X		X	1001507	B
			X				PROTECTION GIRT Assy	1	1002465-501		X		X	1001132	B
				X			PWB, Assy	1	1002824-501		X			1001132	
					X		REGULATOR Assy	1	1002823-507	B	X		X	1001093	B
						X	REGULATOR Assy	1	1002872-501	B	X		X	1001100	
						X	PLATE Assy, BASE	1	1002868-501		X			1001100	
						X	PANEL Assy Control	1	1002869-501		X			1001100	
						X	DETECTOR Assy	1	1001203-501	A	X		X	1002997	A
						X	SIGNAL LIMITER Assy	1	1002142-501	A	X				
X							RF Assy	1	1003002-501	C	X		X	1003010	D
	X						RF BOARD Assy	1	1003006-501	D	X				
		X					PWB Assy RF	1	1003007-501		X				
			X				RF COMPONENT Kit	1	1003002-501		X				
				X			RF BOARD Assy	1	1003003-501	C	X		X	1003009	C
					X		PWB Assy, RF	1	1003004-501		X				
						X	RF COMPONENT Kit	1	1003005-501		X				
X							MANUAL, MODEL 10W1000M7	1	1003011-501						
X							SHIPPING Kit, 14 LAB	1	1002874-501		X				

FORM 109 REV0584


**AMPLIFIER  
RESEARCH**

DATE	R	DATE	R	DATE	R
60-87	-				

**MASTER  
LIST**

09:37:28 14 MAY 1990

## AMPLIFIER PFC-MC

\* \* \* SINGLE LEVEL BILL OF MATERIAL LISTING \* \* \*

REPORT: F0056

PAGE: 1

BILL NO: 1003001-501

REV: 2

U/M: EA

DRAWING NO:

MODEL 10W1000M7, 100MHZ-1000MHZ, 10 WATTS

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER DRAWING NUMBER	CRCT-DSGN
0000	1002873-501	A	COVER KIT, 14" LAB	EA	1.000	
0000	1002874-501		SHIPPING KIT, 14" LAB	EA	1.000	
0000	1002975-502	A	POWER SUPPLY AND HOUSING	EA	1.000	
0000	1003002-501	0	RF ASSY	EA	1.000	ARC\1003002
0000	1003011-501		MANUAL, MODEL 10W1000M7	EA	4.000	
0000	1004754-101-F6-M30	-	PLATE, MODEL IDENTIFICATION (MODEL 10W1000M7)	EA	1.000	ARC\1004754
0000	11018		SCREW, MACH, PAN HD, CROSS-REC, ZN, 6-32 X .38, TYPE SW	EA	14.000	
0000	11020		SCREW, MACH, PAN HD, CROSS-REC, S/S, 6-32 X .50	EA	3.000	
0000	11064		SCREW, MACH, FLT HD, 100 DEG, CROSS-REC, S/S, 6-32 X .38	EA	4.000	
0000	12001		WASHER, LOCK, INT TOOTH, S/S, #6	EA	3.000	
0000	12011		WASHER, FLAT, S/S, #6, .312 00	EA	3.000	
0000	66147		POWER CORD, 3 CONDUCTOR, 18AWG, UNIVERSAL DETACHABLE	EA	1.000	PAE\120-000-BL
1300	35028		FUSE, FAST ACTING, 1.5A, 250V	EA	1.000	LIF\31201.5 F1
1300	35033		FUSE, FAST ACTING, 3A, 250V	EA	1.000	LIF\312003 F1

AMPLIFIER RESEARCH

09:37:29 14 MAY 1990

\*\*\* SINGLE LEVEL BILL OF MATERIAL LISTING \*\*\*

REPORT: E0056

PAGE: 1

BILL NO: 1002375-501

REV: A

U/M: EA

DRAWING NO:

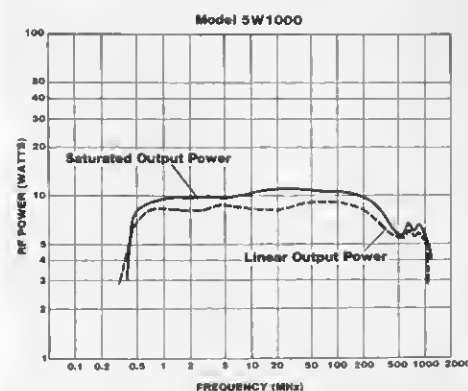
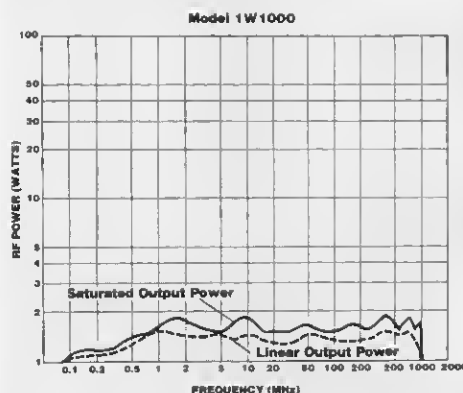
COVER KIT, 14" LAB

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER DRAWING NUMBER	CRCT-DSGN
5000	1002243-101-F2	E	COVER, TOP	EA	1.000 ARC\1002243	
5000	1002243-105-F2	E	GRILL, EXHAUST	EA	1.000 ARC\1002243	

# Specifications

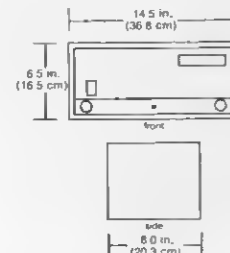
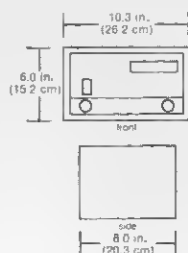
	1W1000	5W1000
<b>Power output, cw</b> up to ..... minimum .....	2 watts 1 watt	9 watts 5 watts
<b>Power output, cw linear</b> ..... (less than 1 dB compression into 50 ohms)	1 watt minimum	5 watts minimum
<b>Flatness</b> .....	$\pm 1.0$ dB maximum; $\pm 0.5$ dB typical	$\pm 1.5$ dB maximum; $\pm 1.0$ dB typical
<b>Frequency response</b> ..... (instantaneous)	100 kHz to 1000 MHz	500 kHz to 1000 MHz
<b>Input for rated output</b> .....	1.0 milliwatt max.	1.0 milliwatt max.
<b>Power gain</b> .....	30 dB minimum	37 dB minimum
<b>Input impedance</b> .....	50 ohms; VSWR 2.0:1 max.	50 ohms; VSWR 2.0:1 max.
<b>Output impedance</b> .....	50 ohms; VSWR 2.5:1 max.	50 ohms nominal
<b>Mismatch tolerance</b> ..... (ability to operate without damage, foldback, or oscillation with any magnitude and phase of source and load impedance)	100%	100%
<b>Modulation capability</b> ..... (ability to reproduce faithfully AM, FM, or pulse modulation appearing on input signal)	100%	100%
<b>Noise Figure</b> .....	8 dB typical	10 dB typical
<b>Harmonic distortion</b> .....	Minus 20 dBc max. at 1 watt.	Minus 20 dBc max. at 5 watts.
<b>Third-order Intercept point</b> ....	42 dBm typical	48 dBm typical
<b>Primary power</b> ..... (select via internal taps)	100/110/120/200/208/220/ 240 Vac $\pm 5\%$ , 50/60 Hz, single-phase, 50 W max.	100/110/120/200/208/220/ 240 Vac $\pm 5\%$ , 50/60 Hz, single-phase, 110 W max.
<b>RF Connectors</b> .....	Type N female	Type N female
<b>Cooling</b> .....	Forced air (self-contained fans)	Forced air (self-contained fans)
<b>Weight</b> .....	4.1 kg (9.0 lb)	9.1 kg (20.0 lb)

Typical Power Curves



## Dimensions

Models 1W1000 and 5W1000 are available as OEM rf circuit modules without power supply. Contact Amplifier Research for further information.



## 10W1000

22 watts  
10 watts

10 watts minimum

$\pm 1.5$  dB maximum;  
 $\pm 1.0$  dB typical

1 to 1000 MHz

1.0 milliwatt max.

40 dB minimum

50 ohms; VSWR 2.0:1 max.

50 ohms nominal

100%

100%

noise floor data on request

Minus 20 dBc max. at 10 watts

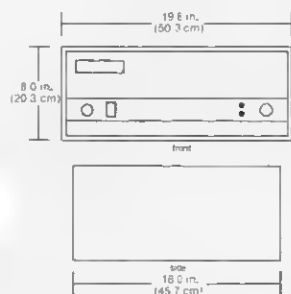
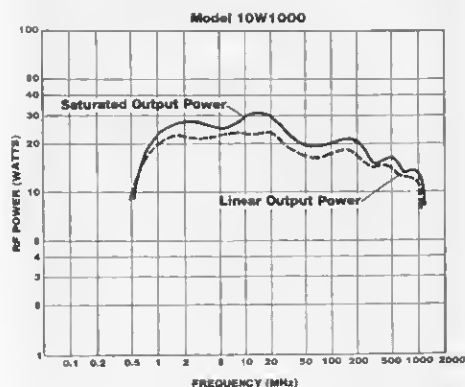
50 dBm typical

100/110/120/200/208/220/  
240 Vac  $\pm 5\%$ , 50/60 Hz,  
single-phase, 400 W max.

Type N female

Forced air (self-contained fans)

28.4 kg (63.0 lb)



## 50W1000

100 watts  
50 watts

40 watts minimum

$\pm 2.0$  dB maximum;  
 $\pm 1.5$  dB typical

1 to 1000 MHz

1.0 milliwatt max.

47 dB minimum

50 ohms; VSWR 2.0:1 max.

50 ohms nominal

100%

100%

noise floor data on request

Minus 20 dBc max. at 40 watts

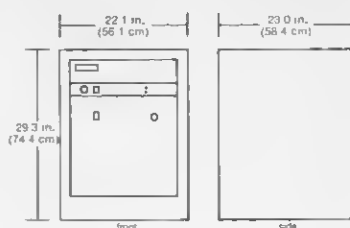
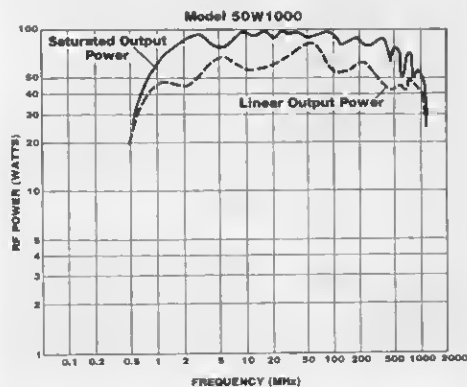
58 dBm typical

100/110/120/200/208/220/  
240 Vac  $\pm 5\%$ , 50/60 Hz,  
single-phase, 1900 W max.

Type N female

Forced air (self-contained fans)

98.0 kg (215.0 lb)



## 10W1000M7

15 watts  
10 watts

8 watts minimum

$\pm 1.5$  dB maximum;  
 $\pm 1.0$  dB typical

100 to 1000 MHz

1.0 milliwatt max.

40 dB minimum

50 ohms; VSWR 2.0:1 max.

50 ohms nominal

100%

100%

noise floor data on request

Minus 20 dBc max. at 8 watts

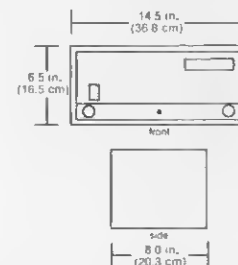
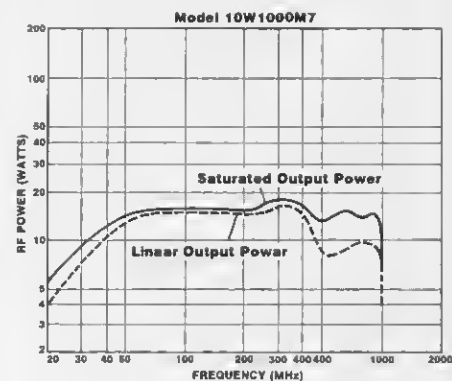
49 dBm typical

100/110/120/200/208/220/  
240 Vac  $\pm 5\%$ , 50/60 Hz,  
single-phase, 150 W max.

Type N female

Forced air (self-contained fans)

9.1 kg (20 lb)



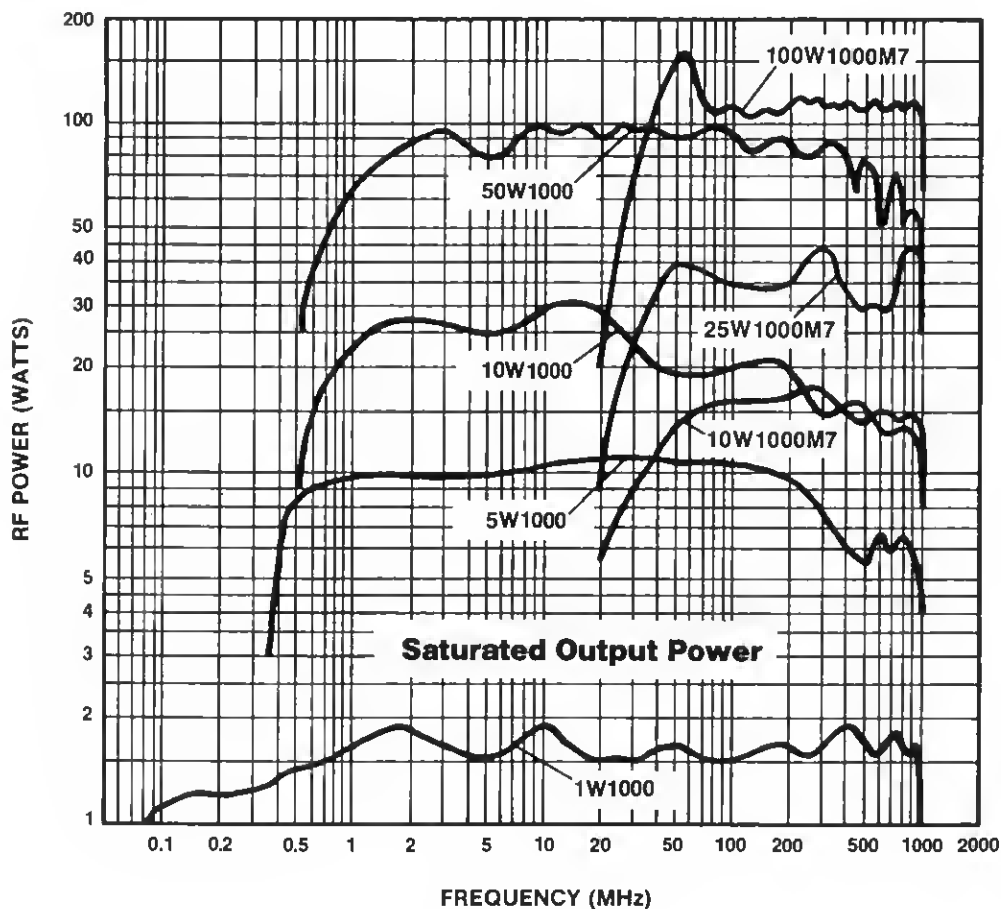
25W1000M7	100W1000M7	
40 watts 25 watts	180 watts 100 watts	<b>Power output, cw</b> up to minimum
20 watts minimum	70 watts minimum	<b>Power output, cw, linear</b> (less than 1 dB compression into 50 ohms)
$\pm 1.5$ dB maximum; $\pm 1.0$ dB typical	$\pm 2.0$ dB maximum; $\pm 1.5$ dB typical	<b>Flatness</b>
100 to 1000 MHz	100 to 1000 MHz	<b>Frequency response</b> (instantaneous)
1.0 milliwatt max.	1.0 milliwatt max.	<b>Input for rated output</b>
45 dB minimum	50 dB minimum	<b>Power gain</b>
50 ohms; VSWR 2.0:1 max.	50 ohms; VSWR 2.0:1 max.	<b>Input impedance</b>
50 ohms nominal	50 ohms nominal	<b>Output impedance</b>
100%	100%	<b>Mismatch tolerance</b> (ability to operate without damage, foldback, or oscillation with any magnitude and phase of source and load impedance)
100%	100%	<b>Modulation capability</b> (ability to reproduce faithfully AM, FM, or pulse modulation appearing on input signal)
noise floor data on request	noise floor data on request	<b>Noise Figure</b>
Minus 20 dBc max. at 20 watts	Minus 20 dBc max. at 70 watts	<b>Harmonic distortion</b>
52 dBm typical	60 dBm typical	<b>Third-order Intercept point</b>
100/110/120/200/208/220/ 240 Vac $\pm 5\%$ , 50/60 Hz, single-phase, 750 W max.	100/110/120/200/208/220/ 240 Vac $\pm 5\%$ , 50/60 Hz, single-phase, 3000 W max.	<b>Primary power</b> (select via internal taps)
Type N female	Type N female	<b>RF Connectors</b>
Forced air (self-contained fans)	Forced air (self-contained fans)	<b>Cooling</b>
28.4 kg (63.0 lb)	98.0 kg (215.0 lb)	<b>Weight</b>
		<b>Typical Power Curves</b>
		<b>Dimensions</b>
		Models 1W1000 and 5W1000 are available as OEM rf circuit modules without power supply. Contact Amplifier Research for further information.
		Specifications subject to change without notice

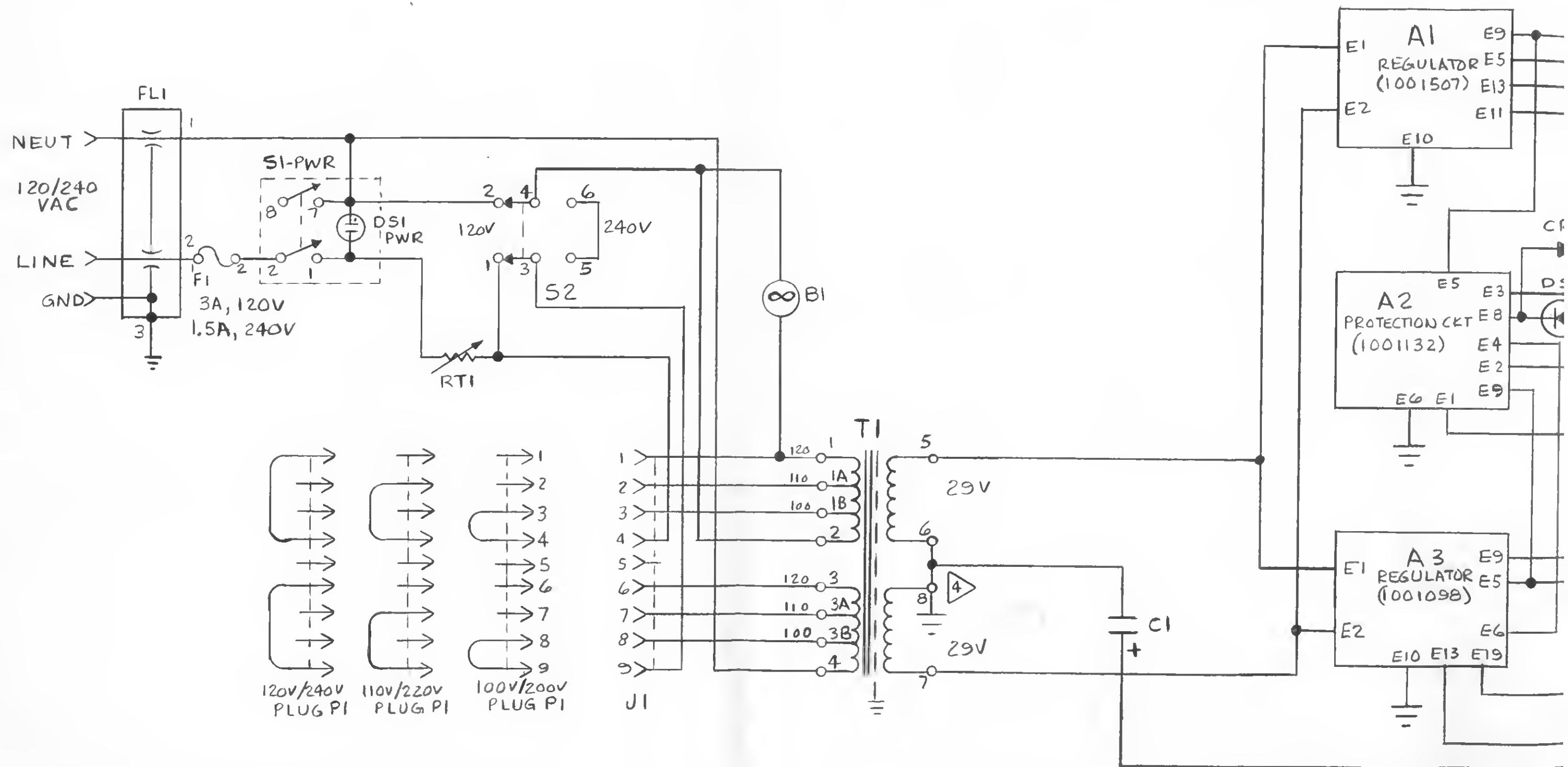
# 1 watt to 100 watts. 100 kHz to 1 GHz.

The Amplifier Research "W" Series constitutes a complete family of self-contained ultra-broadband solid-state amplifiers providing linear operation over the spectrum from 100 kHz to 1000 MHz. The amplifiers are conservatively rated at 1, 5, 10, 25, 50, and 100 watts, and feature instantaneous bandwidth, flat output, and immunity to even worstcase load mismatch including shorted or open cable without damage or system shutdown.

## Applications

- ☐ Sweep, cw, and pulse rf and emi susceptibility testing without bandswitching or tuning
- ☐ Antenna and component testing, and equipment calibration
- ☐ General laboratory instrumentation





NOTES:

RF \

WI

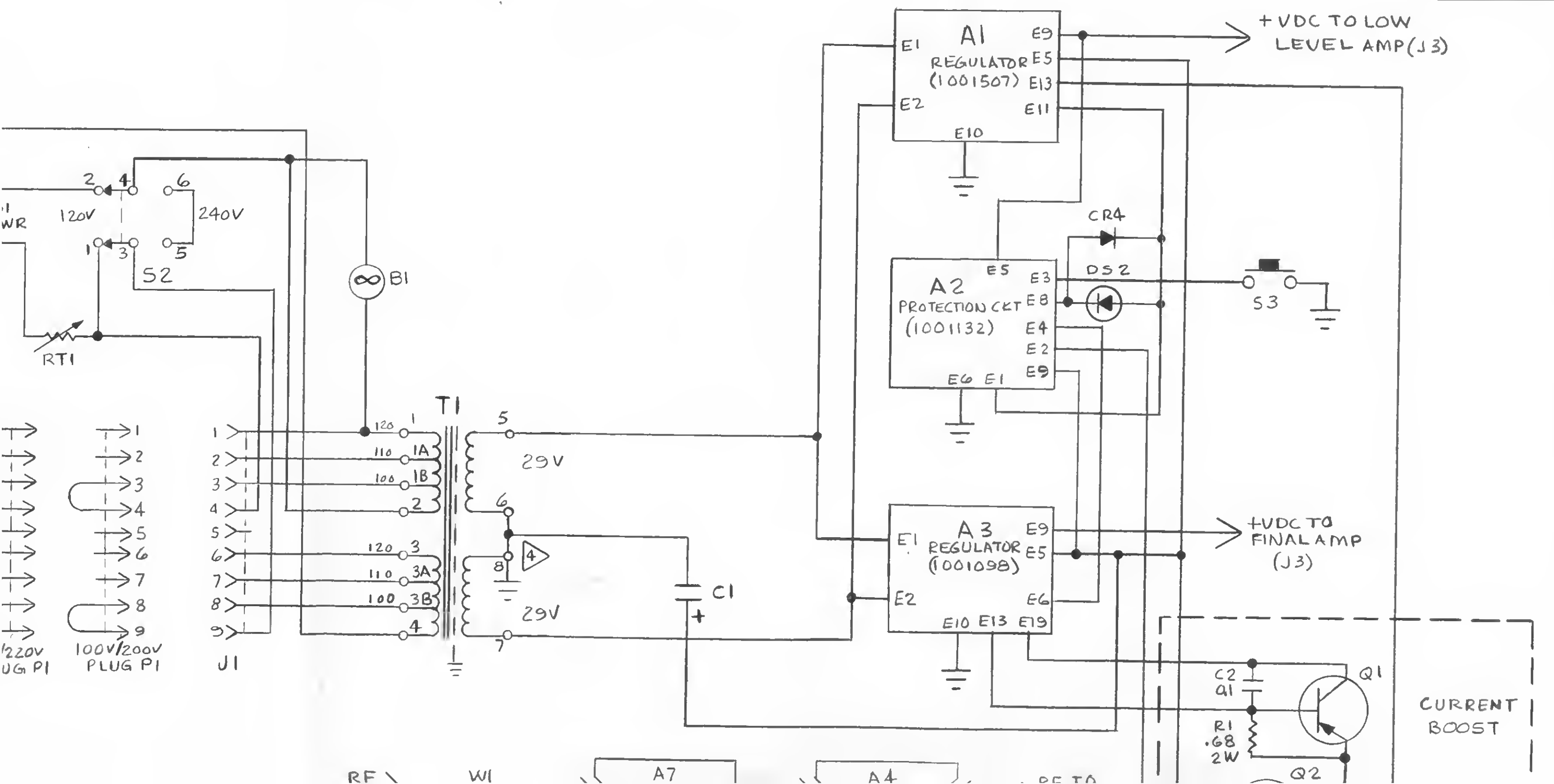
A7

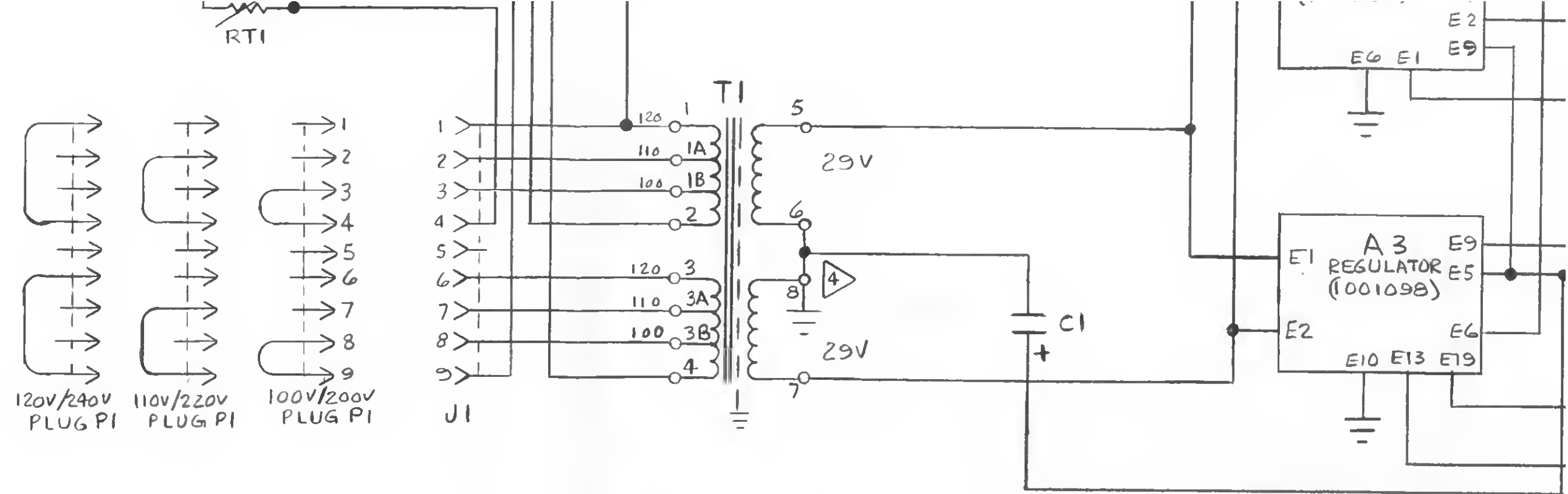
A4

RF TO

REDRAWN

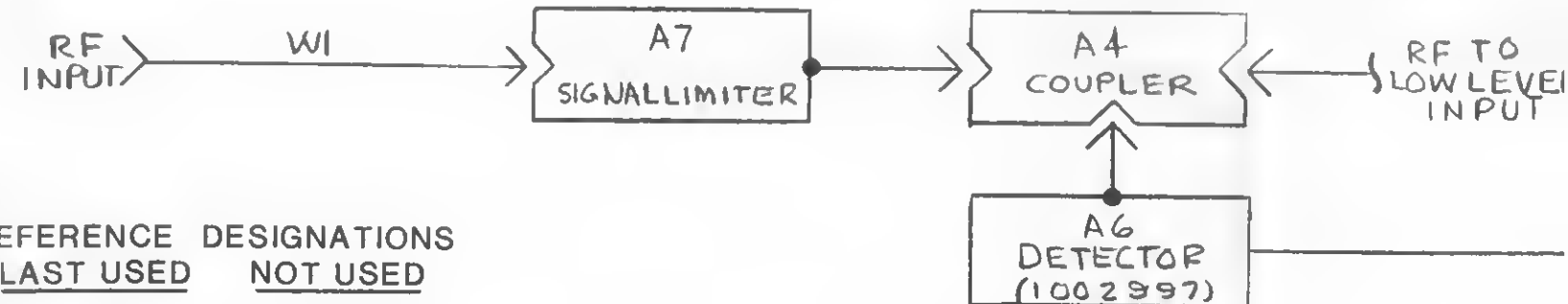
ECN	DATE	REV
1657	17OCT88	T
5128	13FEB90	U





# NOTES:

- 1.0 UNLESS OTHERWISE SPECIFIED:  
RESISTOR VALUES ARE OHMS  
RESISTOR RATINGS ARE 1/4 WATT  
CAPACITOR VALUES ARE MICROFARADS
- 2.0 THIS SCHEMATIC MAY REPRESENT MULTIPLE  
ASSEMBLIES. SEE APPROPRIATE PARTS LIST  
FOR FINAL COMPONENT VALUES.
- 3.0 WHEN CHANGING PRIMARY TAPS ON T1,  
PLUG APPROPRIATE JUMPER (PI) INTO (J1).
- 4.0 RETURN WIRE FROM C1 NEGATIVE MUST BE  
WIRED INDIVIDUALLY TO CENTER TAP OF T1.  
CENTER TAP SHALL BE GROUNDED TO CHASSIS  
USING SHORTEST WIRE PRACTICABLE.



REFERENCE	DESIGNATIONS
LAST USED	NOT USED
A7	PI
B1	R2
C2	RT1
CR4	S3
DS2	T1
F1	W1
FL1	Q2
J1	

QTY. REQD.
UNLESS OTHERWISE SPECIFIED DO NOT SCALE DRAWING. DIMENSIONS ARE IN INCHES AND INCLUDE PLATING THICKNESS ALL THREADS ARE UNIFIED NATIONAL SERIES, CLASS 2. REMOVE ALL BURRS AND SHARP EDGES. TOLERANCE: ± .010.
10W1000M7
5W1000
USED ON MODEL



09:37:30 14 MAY 1990

AMPLIFIER RESEARCH  
 \* \* \* SINGLE LEVEL BILL OF MATERIAL LISTING \* \* \*

REPORT: E0056

PAGE: 1

BILL NO: 1002975-502

REV: A

U/M: EA

DRAWING NO:

POWER SUPPLY AND HOUSING

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	CRCT-DSGN
0010	1001100	U	SCHEMATIC DIAGRAM, POWER SUPPLY	EA	REF	ARC\1001100	
5000	1002243-104-F2	-	PLATE, L.C.	EA	1.000	ARC\1002243	1
5010	1002243-103-F2	-	PLATE, R.S.	EA	1.000	ARC\1002243	2
5020	69074		MOUNTING FOOT, RUBBER, 5/8 OD, 5/8 HT, 5/16 DIA, 7/160P	EA	4.000	RUS\REC-2090S	
5030	1002500-501	C	HARNESS ASSY, POWER SUPPLY	EA	1.000		
5040	1002869-501	0	PLATE ASSY, BASE	EA	1.000		
5040	1002869-501	8	PANEL ASSY, CONTROL	EA	1.000		
5040	66009		WIRE, TEFLON, 16 AWG, STRANDED, BLACK	IN	6.500		
5040	69100		LUG, SHAKEPROOF, BENT, 41/64 L, #6 STD, DUAL HOLE	EA	1.000	HMS\1416-6	
7100	11014		SCREW, MACH, PAN HD, CROSS-REC, S/S, 6-32X.25	EA	1.000		
7100	11018		SCREW, MACH, PAN HD, CROSS-REC, ZN, 6-32 X .38, TYPE SW	EA	14.000		
7100	11020		SCREW, MACH, PAN HD, CROSS-REC, S/S, 6-32 X .50	EA	2.000		
7100	11064		SCREW, MACH, FLT HD, 100 DEG, CROSS-REC, S/S, 6-32X.38	EA	6.000		

09:37:33 14 MAY 1990

AMPLIFIER RESEARCH  
 \* \* \* SINGLE LEVEL BILL OF MATERIAL LISTING \* \* \*

REPORT: E0056

PAGE: 1

BILL NO: 1002500-501

REV: C

U/M: EA

DRAWING NO:

HARNESS ASSY, POWER SUPPLY

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	CRCT-DSGN
0010	1001100	U	SCHEMATIC DIAGRAM, POWER SUPPLY	EA REF		ARC\1001100	
0010	1002870	-	WIRE LIST, P.S.	EA REF		ARC\1002870	
0010	1002871-101		HARNESS BOARD, POWER SUPPLY	EA REF		ARC\1002871	
0100	1002823-509	B	REGULATOR ASSY	EA	1.000	ARC\1001097	A1
0110	1002485-501	-	PROTECTION CIRCUIT ASSY	EA	1.000		A2
0120	1002823-507	C	REGULATOR ASSY	EA	1.000	ARC\1001097	A3
3100	57032		SWITCH, LIGHTED-ROCKER, W/O INDEP. LAMP CONTACT, DPST	EA	1.000	LT16X50-IL-WH-RCA	S1
5000	41117		PIN, CONNECTOR	EA	3.000	CAM\460-3308-01-03	I2
5010	69142		TERMINAL, RING, INSUL, #10 STUD, 22-16 AWG	EA	2.000	TAB\RA-877	I3
5020	69145		TERMINAL, RING, INSUL, #10 STUD, 16-14 AWG	EA	1.000	TAB\RB-877	I8
5030	66067		WIRE, IRRADIATED, PVC, TYPE 18, 22 AWG, 19 STRAND, BLACK IN	A/R			
5030	66068		WIRE, IRRADIATED, PVC, TYPE 18, 22 AWG, 19 STRAND, BROWN IN	A/R			
5030	66073		WIRE, IRRADIATED, PVC, TYPE 18, 22 AWG, 19 STRAND, BLUE IN	A/R			
5030	66074		WIRE, IRRADIATED, PVC, TYPE 18, 22 AWG, 19 STRAND, VIOL. IN	A/R			
5030	66075		WIRE, IRRADIATED, PVC, TYPE 18, 22 AWG, 19 STRAND, GRAY IN	A/R			
5030	66076		WIRE, IRRADIATED, PVC, TYPE 18, 22 AWG, 19 STRAND, WHITE IN	A/R			
5030	66077		WIRE, IRRADIATED, PVC, TYPE 18, 22 AWG, 19 STR, WHT/BLK IN	A/R			
5030	66079		WIRE, IRRADIATED, PVC, TYPE 18, 22 AWG, 19 STR, WHT/RED IN	A/R			
5030	66082		WIRE, IRRADIATED, PVC, TYPE 18, 22 AWG, 19 STR, WHT/GRN. IN	A/R			
5030	66084		WIRE, IRRADIATED, PVC, TYPE 18, 22 AWG, 19 STR, WHT/BLUE IN	A/R			
5030	66085	FT	WIRE, IRRADIATED, PVC, TYPE 18, 22 AWG, 19 STR, WHT/GRAY IN	A/R			
5030	69161		CABLE TIES, 7/32" MAX BUNDLE DIA. 4" L	EA	75.000	DEN108432	

# AMPLIFIER RESEARCH

09:37:37 14 MAY 1990

\* \* \* SINGLE LEVEL BILL OF MATERIAL LISTING \* \* \*

REPORT: E0056

PAGE: 1

BILL NO: 1002972-501  
REGULATOR ASSY

REV: 0

U/M: EA

DRAWING NO: ARC\1002972

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER DRAWING NUMBER	CRCT-DSGN
0010	1001100	U	SCHEMATIC DIAGRAM, POWER SUPPLY	EA REF	ARC\1001100	
0400	27198		CAP, CERAMIC, 0.1MF, +80-20%, 100V, CHAR. Z5U	EA	1.000 MPC\EF104Z	C2
0700	1N5061		DIODE, RECTIFIER, 1.5AMP, 500V	EA	1.000 TEL\1N5061	CR3
2500	54509		TRANSISTOR, SWITCHING, PNP, 100V, 10A, 30W	EA	1.000 TII\TIP-34C	Q1
2510	54514		TRANSISTOR, SWITCHING, NPN, 100V, 10A, 125W	EA	1.000 TII\TIP-14Z	Q2
2700	55715-R680J		RESISTOR, FXO, WW, 0.68, 5%, 2W, TYPE BWH	EA	1.000	R1
2710	55514-2700J		RESISTOR, FXO, CARBON COMP, 270, 5%, 1W	EA	1.000	R2
4000	1N4752A		DIODE, ZENER, 33V, 5%, 1W	EA	1.000 MOT\1N4752A	VR1
5000	1002051-101	C	BRACKET, TRANSISTOR MOUNTING	EA	1.000 ARC\1002051	1
5010	53008		TERMINAL STRIP, 7 TERMINAL	EA	1.000 SPC\LTS-207	2
5020	69091		INSULATOR, HO ANODIZED, TYPE T0-220, .950 L, .500 W	EA	2.000 THM\4778A	3
5030	77064		COMPOUND, THERMAL JOINT, TYPE 120	EA A/R	WAK\120-S	4
5040	69100		LUG, SHAKEPROOF, BENT, 41/64 L, #6 STD, DUAL HOLE	EA	2.000 HHS\1416-6	5
5050	11011		SCREW, MACH, PAN HD, CROSS-REC, S/S, 4-40 X .38	EA	2.000	6
5060	11018		SCREW, MACH, PAN HD, CROSS-REC, ZN, 6-32 X .38, TYPE SW	EA	2.000	7
5070	12010		WASHER, FLAT, S/S, #4, .250 00 X .125 10 X .028 THK	EA	2.000 AMS-15795-803	8
5080	12000		WASHER, LOCK, INT TOOTH, S/S, #4	EA	2.000	9
5090	12037		WASHER, SHLDR, N, .232 00 X .115 10 X .047 SHLD THK	EA	2.000 REL\NY-04-040	10
5100	65073		WIRE, IRRADIATED, PVC, TYPE 18, 22 AWG, 19 STRAND, BLUE	IN A/R		11
5110	66076		WIRE, IRRADIATED, PVC, TYPE 18, 22 AWG, 19 STRAND, WHITE	IN A/R		12
5120	66079		WIRE, IRRADIATED, PVC, TYPE 18, 22 AWG, 19 STR, WHT/RED	IN A/R		13
5130	66084		WIRE, IRRADIATED, PVC, TYPE 18, 22 AWG, 19 STR, WHT/BLUE	IN A/R		14
5140	66069		WIRE, IRRADIATED, PVC, TYPE 18, 22 AWG, 19 STRAND, RED	IN A/R		15
5150	66117		TUBING, SHRINKABLE, BLACK, .187 EAP, .093 REC	IN	6.000	16

09:37:41 14 MAY 1990

AMPLIFIER RESEARCH  
\* \* \* SINGLE LEVEL BILL OF MATERIAL LISTING \* \* \*

REPORT: E0056

PAGE: 1

BILL NO: 1002868-501  
PLATE ASSY, BASE

REV: D U/M: EA DRAWING NO:

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER DRAWING NUMBER	CRCT-DSGN
0010	1001100	U	SCHEMATIC DIAGRAM, POWER SUPPLY	EA REF	ARC\1001100	
0200	37011		FAN, SHADED POLE, 120V, 50/60HZ, 106CFM	EA	1.000 PAPI4600N	8I
1400	35019		FILTER, LINE, 6 AMP	EA	1.000 COR\6EF1	FL1
1500	41105		TERMINAL, .093 DIA, CRIMP TYPE, FEMALE	EA	8.000 MOL\02-09-1118	JI
1500	41131		CONNECTOR, RECEPT, W/EARS & DETENT LOCK, 9 CKT, MALE	EA	1.000 MOL\03-09-1092	JI
2200	1003909-501	A	CONNECTOR ASSY, VOLTAGE SELECT	EA	1.000 ARC\1003909	P1
3000	56075		RESISTOR, CURRENT LIMITER, 2.5 OHM, 25%, 25 DEG C, 8A	EA	1.000 KCC\CLS-30	RT1
3100	57044		SWITCH, SLIDE, DPDT, 6A, 125VAC	EA	1.000 SWC\46256LFE	S2
3200	1001066-101	F	XFMR, PWR, 120/240, 57 VAC, 5.0 A	EA	1.000 ARC\1001066	T1
4500	73002		FUSEHOLDER, MKP	EA	1.000 LIF\342012	XF1
5000	1000033-101	C	SCREEN, AIR INTAKE	EA	1.000 ARC\1000033	
5000	1002243-111-F2	L	COVER, BOTTOM	EA	1.000 ARC\1002243	
5000	1002872-501	D	REGULATOR ASSY	EA	1.000 ARC\1002872	
5000	69119		RIVET, GRIP-TITE, A, 1/8" DIA, 1/8" MAT'L THICKNESS	EA	2.000 GRA\4X641	
5000	69120		RIVET, GRIP-TITE, A, 1/8" DIA, 1/8-1/4" MAT'L THICKNESS	EA	2.000 GRA\5X520	
5000	69157		TERMINAL, INSUL, STANDOFF, 6-32 THD	EA	1.000 USC\1417-4-5	
7100	11014		SCREW, MACH, PAN HD, CROSS-REC, S/S, 6-32 X .25	EA	1.000	
7100	11021		SCREW, MACH, PAN HD, CROSS-REC, 6-32 X .62	EA	6.000	
7100	11028		SCREW, MACH, PAN HD, CROSS-REC, S/S, 8-32 X .38	EA	4.000	
7300	13004		NUT, HEX, S/S, 6-32, .250AF	EA	7.000	
7300	13006		NUT, HEX, S/S, 8-32, .343AF	EA	4.000	
7500	12001		WASHER, LOCK, INT TOOTH, S/S, #6	EA	8.000	
7500	12002		WASHER, LOCK, INT TOOTH, S/S, #8	EA	4.000	
7500	12011		WASHER, FLAT, S/S, #6, .312 OD	EA	7.000	

# AMPLIFIER RESEARCH

09:37:43 14 MAY 1990

\* \* \* SINGLE LEVEL BILL OF MATERIAL LISTING \* \* \*

REPORT: E0056

PAGE: 2

BILL NO: 1002868-501  
PLATE ASSY.BASE

REV: 0 U/M: EA DRAWING NO:

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER DRAWING NUMBER	CRCT-DSGN
7500	12012		WASHER,FLAT,S/S,#8,.375 00	EA	4.000	

09:37:45 14 MAY 1990

AMPLIFIER RESEARCH  
 \* \* \* SINGLE LEVEL BILL OF MATERIAL LISTING \* \* \*

REPORT: E0056 PAGE: 1

BILL NO: 1002869-501  
 PANEL ASSY, CONTROL

REV: B

U/M: EA

DRAWING NO:

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	CRCT-DSGN
0010	1001100	U	SCHEMATIC DIAGRAM, POWER SUPPLY	EA REF		ARC\1001100	
0100	25022		COUPLER, DIRECTIONAL, 1-1000MHZ, 100B	EA	1.000	EMM\LOCK-1010B	A4
0110	1001203-501	C	DETECTOR ASSEMBLY	EA	1.000	ARC\1001203	A6
0120	1002142-501	A	SIGNAL LIMITER ASSY	EA	1.000	ARC\1002142	A7
0400	27095		CAP, ELECT, 9000UF, 40V	EA	1.000	MAL\CGS302U040R4C	C1
0700	1N5061		0100E, RECTIFIER, 1.5AMP, 600V	EA	1.000	TEL\1N5061	CR4
1000	33003		LED, RED, T1 3/4(5mm)	EA	1.000	H-P\HLMP-3001-009	OS2
3110	57029		SWITCH, PB, MOMENTARY, SPST(N.O.)	EA	1.000	A-S\MSPS-103C-2	S3
5000	1000532-101-F1	O	PANEL, TRIM	EA	1.000	ARC\1000532	
5000	1002207-101	B	NAME PLATE, LOGO, DIE CAST	EA	1.000	ARC\1002207	
5000	1002243-106	G	PANEL, FRONT	EA	1.000	ARC\1002243	
5000	1002243-110-F2-M2	-	PANEL, CONN "N"	EA	1.000	ARC\1002243	
5000	14001		FASTENER, TINNERMAN, C12005-017-4	EA	2.000		
5000	20000	-	CABLE ASSY, COAX, RG-188A/U, BNC, N, 12.0	EA	1.000	ARC\1002494	
5000	69071		CLIP, COMPONENT, 1.00" L, 1.375" DIA, 1.439" HT	EA	2.000	STM\4511-137-1002C	
5000	69119		RIVET, GRIP-TITE, A, 1/8" DIA, 1/8" MAT'L THICKNESS	EA	4.000	GRA\41641	
7100	11018		SCREW, MACH, PAN HD, CROSS-REC, ZN, 6-32 x .38, TYPE SW	EA	7.000		
7100	11064		SCREW, MACH, FLT HD, 100 DEG, CROSS-REC, S/S, 6-32 x .38	EA	2.000		
7100	11067		SCREW, MACH, FLT HD, 100 DEG, CROSS-REC, S/S, 6-32 x 1.00	EA	2.000		
7300	13004		NUT, HEX, S/S, 6-32, .250AF	EA	2.000		
7500	12001		WASHER, LOCK, INT TOOTH, S/S, #6	EA	2.000		

# AMPLIFIER RESEARCH

09:37:47 14 MAY 1990

\* \* \* SINGLE LEVEL BILL OF MATERIAL LISTING \* \* \*

REPORT: E0056

PAGE: 1

BILL NO: 1002142-501

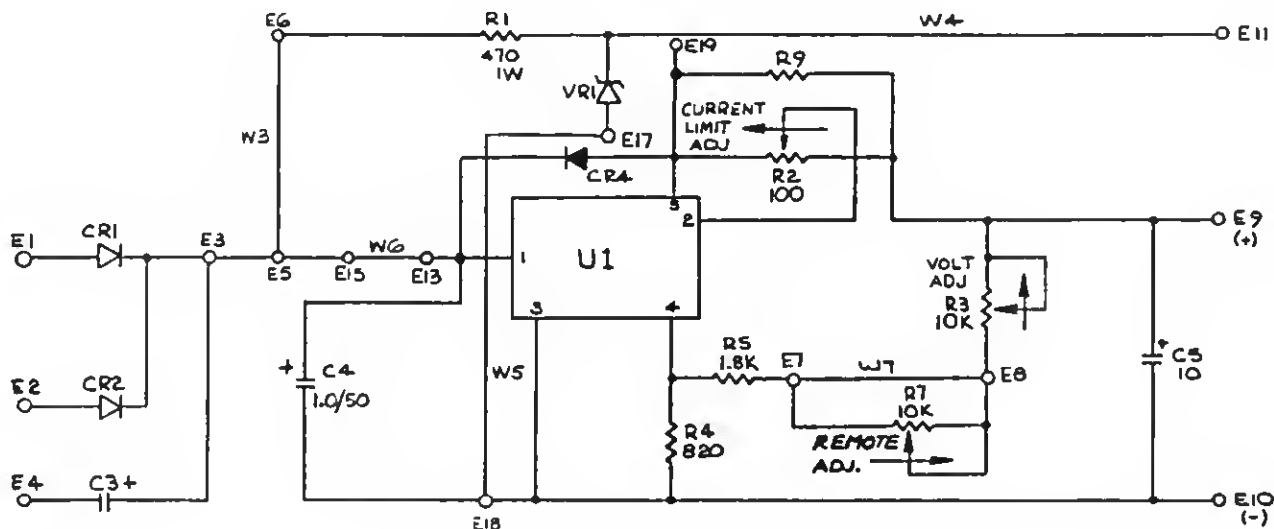
REV: A

U/M: EA

DRAWING NO: ARC\1002142

SIGNAL LIMITER ASSY

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	CRCT-DSGN
0700	1N4448		DIODE,SIGNAL,75V PIV	EA	2.000	FCH\1N4448	CR1 ,CR2
1500	UG-625B/U		CONN,COAX,8ULKHO RECEPT,TYPE BNC(F)	EA	1.000	AMH\UG-625B/U	JI
2200	41013		CONNECTOR,COAX,BNC,PLUG,R6-18BA/U	EA	1.000	XIN\KC-59-I52	PI
4200	66151		WIRE,IRRADIATED,PVC,26 AWG,SOLID,RED	IN	A/R		WI
4200	66152		WIRE,IRRADIATED,PVC,26 AWG,SOLID,BLACK	IN	A/R		WI
5000	1002464-101	-	CAN,MODIFIED	EA	-	1.000 ARC\1002464	I
5010	80002		COVER,HU5365 CAN	EA	1.000	HUC\HU5365CAST-HTO 2	



ECN	DATE	REV
161	10/1/81	1
162	10/1/81	2
163	10/1/81	3
164	10/1/81	4
165	10/1/81	5
166	10/1/81	6
167	10/1/81	7
168	10/1/81	8
169	10/1/81	9
170	10/1/81	10

# NOTES:

- 1.0 UNLESS OTHERWISE SPECIFIED:  
RESISTOR VALUES ARE OHMS  
RESISTOR RATINGS ARE 1/4 WATT  
CAPACITOR VALUES ARE MICROFARADS

- 2.0 THIS SCHEMATIC MAY REPRESENT MULTIPLE ASSEMBLIES. SEE APPROPRIATE PARTS LIST FOR FINAL COMPONENT VALUES.

## REFERENCE DESIGNATIONS LAST USED NOT USED

C5	U1	R3, R4
CR4	VR1	W1, W2
E19	W7	CR3
R9		C1, C2

QTY. REQD.		ITEM	PART NO.	DESCRIPTION	MATERIAL
			PARTS LIST		
UNLESS OTHERWISE SPECIFIED DO NOT SCALE DRAWING. DIMENSIONS ARE IN INCHES AND INCLUDE PLATING THICKNESS. ALL THREADS ARE UNIFIED NATIONAL SERIES, CLASS 2. REMOVE ALL BURRS AND SHARP EDGES. TOLERANCE: ±.018.		DRAWN J. VOGENBERG DATE 16 JUN 81 CHKD SAJ DATE 15 NOV 88 MECH R. Donnell DATE 15 NOV 88 ELEC DATE	<b>AMPLIFIER RESEARCH</b>  <b>SCHEMATIC DIAG REGULATOR MPLV</b>  DWG. SCALE 2 DWG. NO. 1001507 REV. G SHEET 1 OF 1		
GEN USE USED ON MODEL					

09:37:50 14 MAY 1990

AMPLIFIER RESEARCH  
 \* \* \* SINGLE LEVEL BILL OF MATERIAL LISTING \* \* \*

REPORT: E0056

PAGE: 1

 BILL NO: 1002823-509  
 REGULATOR ASSY

REV: 8

U/M: EA

DRAWING NO: ARC\1001097

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	CRCT-OSGN
0010	1001507	G	SCHEMATIC DIAGRAM,REGULATOR ASSY	EA REF		ARC\1001507	
0410	27058		CAP,ELECT,10F,50V,+/-20%,RADIAL	EA	1.000	PAN\ECEA1HU010	C4
0420	27063		CAP,ELECT,10UF,50V,+/-20%,AXIAL	EA	1.000	PAN\ECEBIHU100	C5
0700	1N5401		DIODE,3AMP,100V PIV	EA	2.000	SSM\1N5401	CR1 ,CR2
0710	1N5061		DIODE,RECTIFIER,1.5AMP,600V	EA	1.000	TEL\1N5061	CR4
2700	55514-4700J		RESISTOR,FXD,,CARBON COMP,470,5%,1W	EA	1.000	A-8\6B4715	R1
2710	55923		RES,VAR,CERMET,MULTITURN,SIDE ADJ,100,10%,1/2W	EA	1.000	BOR\3299Z-1-101	R2
2720	55930		RESISTOR,VARIABLE,COMP,10K,10%,1/4W	EA	1.000	CTS\U201R1038	R3
2730	55612-8200J		RESISTOR,FXD,METAL FILM,820,5%,1/4-1/2W	EA	1.000	TRW\6P55-8200+/-5%	R4
2740	55612-1801J		RESISTOR,FXD,METAL FILM,1.8K,5%,1/4-1/2W	EA	1.000	TRW\6P55-1801+/-5%	R5
2750	55715-R680J		RESISTOR,FXD,WW,0.68,5%,2W,TYPE BWH	EA	1.000		R9
3700	60033		INTEGRATED CIRCUIT,LINEAR,POS.,ADJ.VOLTAGE,2A	EA	1.000	S6S\1L200CV	U1
4000	1N5363A		DIODE,ZENER,30V,10%,5W	EA	1.000	SSM\1N5363A	VR1
4200	66047		WIRE,BUSS,TINNED COPPER,22 AWG	IN	5.500	ALP\9022	W3 ,W4 W5 ,W7 W8 ,W9
4200	66139		TUBING,TEFLON,NAT'L CLR,20AWG,.034ID,.012WALL THK IN A/R			ALP\TFT200 20AWG	W3 ,W4 W5 ,W7 W8 ,W9
5000	1001096-101	M	PWB,REGULATOR	EA	1.000	ARC\1001096	
5010	1001099-101	B	BRACKET,MOUNTING,MPLV REGULATOR	EA	1.000	ARC\1001099	
5020	69175		MOUNTING TAB,NAT'L COLOR NYLON,21/32 O/A,3/8 W	EA	1.000	PLM\A-30-167	
5020	77064		COMPOUND,THERMAL JOINT,TYPE 120	EA A/R		WAK\120-S	
7100	11011		SCREW,MACH,PAN HD,CROSS-REC,S/S,4-40 X .38	EA	1.000		
7100	11020		SCREW,MACH,PAN HD,CROSS-REC,S/S,6-32 X .50	EA	4.000		
7100	11064		SCREW,MACH,FLT HD,100 DEG,CROSS-REC,S/S,6-32X.38	EA	1.000		

## AMPLIFIER RESEARCH

09:37:52 14 MAY 1990

\* \* \* SINGLE LEVEL BILL OF MATERIAL LISTING \* \* \*

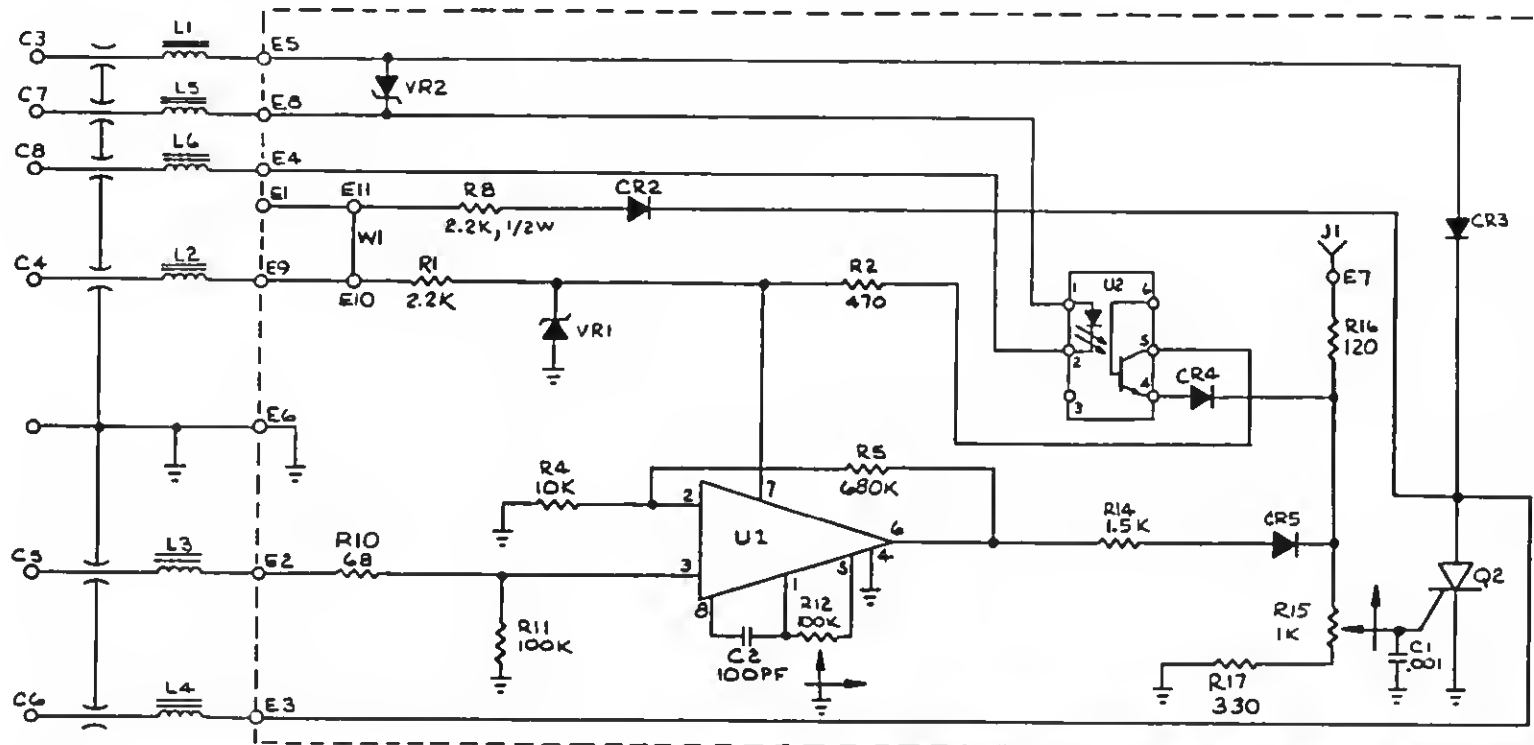
REPORT: E0056

PAGE: 2

BILL NO: I002823-509  
REGULATOR ASSY

REV: B U/M: EA DRAWING NO: ARC\1001097

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER DRAWING NUMBER	CRCT-DSGN
7300	13003		NUT,HEX,S/S,4-40,.187AF	EA	1.000	
7300	13004		NUT,HEX,S/S,6-32,.250AF	EA	5.000	
7500	12000		WASHER,LOCK,INT TOOTH,S/S,#4	EA	1.000	
7500	12001		WASHER,LOCK,INT TOOTH,S/S,#6	EA	5.000	
7500	12010		WASHER,FLAT,S/S,#4,.250 00 X .125 ID X .028 THK	EA	1.000	MS-15795-803
7500	12011		WASHER,FLAT,S/S,#6,.312 00	EA	5.000	
7500	12024		WASHER,FLAT,8/ZN PLTG,.312 00 X .164 ID X .125 THK	EA	4.000	MS785-M01-F21-.164



ECN	DATE	REV
11	1/10/81	G
12	2/20/81	H
13	3/10/81	I
14	7/10/81	K
15	8/10/81	L
16	11/10/81	M

# NOTES:

1.0 UNLESS OTHERWISE SPECIFIED:  
 RESISTOR VALUES ARE OHMS  
 RESISTOR RATINGS ARE 1/4 WATT  
 CAPACITOR VALUES ARE MICROFARADS

2.0 THIS SCHEMATIC MAY REPRESENT MULTIPLE  
 ASSEMBLIES. SEE APPROPRIATE PARTS LIST  
 FOR FINAL COMPONENT VALUES.

## REFERENCE DESIGNATIONS

LAST USED	NOT USED
C8 Q2	CR1
CR5 R17	Q1
E11 U2	R3, R6, R7,
J1 VR2	R13, R9
L6 W1	

QTY. REQD.		ITEM	PART NO.	DESCRIPTION	MARK	FIN	MATL
UNLESS OTHERWISE SPECIFIED DO NOT SCALE DRAWING. DIMENSIONS ARE IN INCHES AND INCLUDE PLATING THICKNESS. ALL THREADS ARE UNIFIED NATIONAL SERIES, CLASS 2. REMOVE ALL BURRS AND SHARP EDGES. TOLERANCE: ± .010.		100W1000M 80W1000M 5W1000 10W1000 5W1000 USED ON MODEL	100W1000M 80W1000M 5W1000 10W1000 5W1000 USED ON MODEL	100W1000M 80W1000M 5W1000 10W1000 5W1000 USED ON MODEL	100W1000M 80W1000M 5W1000 10W1000 5W1000 USED ON MODEL	100W1000M 80W1000M 5W1000 10W1000 5W1000 USED ON MODEL	100W1000M 80W1000M 5W1000 10W1000 5W1000 USED ON MODEL

DRAWN J. VOGENBERG DATE 17 JUN 81			<b>SCHEMATIC DIAG PROTECTION CKT</b>
CHKD G. Bushell DATE 1/12/85 MECH H. J. Allen DATE 3/11/81 ELEC			
DWG. SCALE 2:1	DWG. NO. 1001132	REV. M	
SHEET 1 OF 1			

## AMPLIFIER RESEARCH

09:37:53 14 MAY 1990

\* \* \* SINGLE LEVEL BILL OF MATERIAL LISTING \* \* \*

REPORT: E0056

PAGE: 1

BILL NO: 1002465-501

REV: -

U/M: EA

DRAWING NO:

PROTECTION CIRCUIT ASSY

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	CRCT-DSGN
0010	1001132	M	SCHEMATIC DIAGRAM, PROTECTION CIRCUIT	EA	REF	ARC\1001132	
5000	1001099-101	B	BRACKET, MOUNTING, MPLV REGULATOR	EA	1.000	ARC\1001099	
5000	1002824-501	E	PRINTED WIRING BOARD ASSY	EA	1.000	ARC\1001134	
5000	69175		MOUNTING TAB, NAT'L COLOR NYLON, 21/32 O/A, 3/8 W	EA	1.000	PLM\A-30-167	
7100	11020		SCREW, MACH, PAN HD, CROSS-REC, S/S, 6-32 X .50	EA	4.000		
7110	11064		SCREW, MACH, FLT HD, 100 DEG, CROSS-REC, S/S, 6-32 X .38	EA	1.000		
7300	13004		NUT, HEX, S/S, 6-32, .250AF	EA	5.000		
7500	12001		WASHER, LOCK, INT TOOTH, S/S, #6	EA	5.000		
7500	12011		WASHER, FLAT, S/S, #6, .312 00	EA	5.000		
7500	12024		WASHER, FLAT, B/ZN PLTG, .312 00 X .164 ID X .125 THK	EA	4.000	\S7B5-M01-F21-.164	

## AMPLIFIER RESEARCH

09:37:56 14 MAY 1990

\* \* \* SINGLE LEVEL BILL OF MATERIAL LISTING \* \* \*

REPORT: E0056

PAGE: 1

BILL NO: 1002824-501

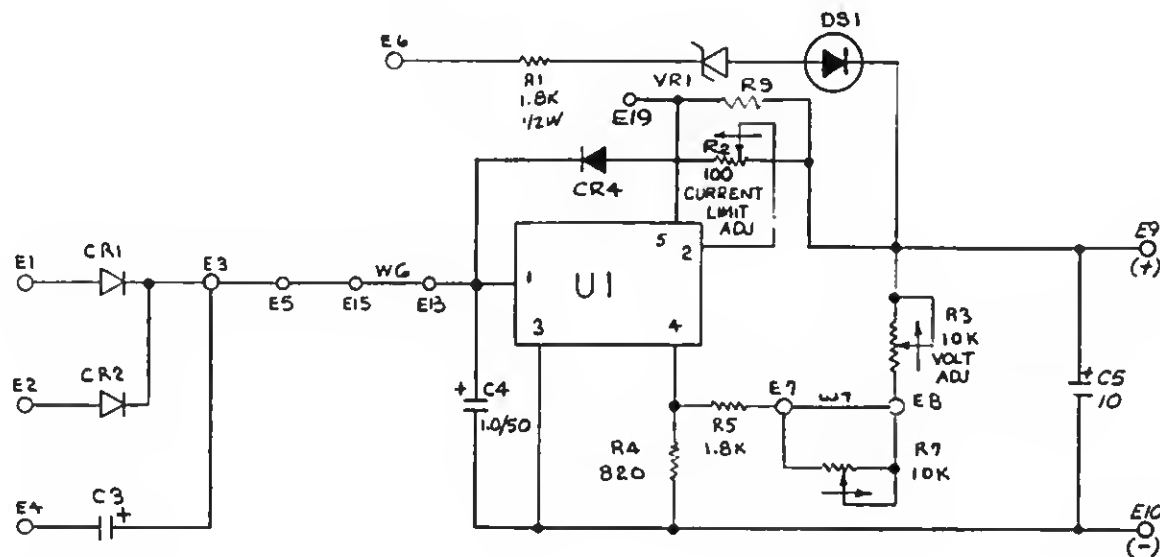
REV: E

U/M: EA

DRAWING NO: ARC\1001134

PRINTED WIRING BOARD ASSY

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	CRCT-OSGN
0010	1001132	M	SCHEMATIC DIAGRAM, PROTECTION CIRCUIT	EA REF		ARC\1001132	
0400	27179		CAP, CERAMIC, 1000PF, 10%, 600/1000V, CHAR. Z5F	EA	1.000	MPC\GB-102K	C1
0410	27181		CAP, CERAMIC, 100PF, 10%, 600/1000V, CHAR. S3N	EA	1.000	MUE\GH101K	C2
0700	1N4448		0100E, SIGNAL, 75V PIV	EA	3.000	FCH\1N4448	CR2 , CR4 CR5
0710	1N5061		0100E, RECTIFIER, 1.5AMP, 600V	EA	1.000	TEL\1N5061	CR3
2500	54543		SCR, 200V, 4.0A	EA	1.000	POW\CR2AMB	Q2
2700	55612-2201J		RESISTOR, FXO, METAL FILM, 2.2K, 5%, 1/4-1/2W	EA	2.000	TRW\GP55-2201+/-5%	R1 , R8
2710	55612-4700J		RESISTOR, FXO, METAL FILM, 470, 5%, 1/4-1/2W	EA	1.000	TRW\GP55-4700+/-5%	R2
2720	55612-1002J		RESISTOR, FXO, METAL FILM, 10K, 5%, 1/4-1/2W	EA	1.000	TRW\GP55-1002+/-5%	R4
2730	55612-6803J		RESISTOR, FXO, METAL FILM, 680K, 5%, 1/4-1/2W	EA	1.000	TRW\GP55-6803+/-5%	R5
2750	55612-68R0J		RESISTOR, FXO, METAL FILM, 68, 5%, 1/4-1/2W	EA	1.000	TRW\GP55-68R0+/-5%	R10
2760	55612-1003J		RESISTOR, FXO, METAL FILM, 100K, 5%, 1/4-1/2W	EA	1.000	TRW\GP55-1003+/-5%	R11
2770	55933		RESISTOR, VARIABLE, 100K, 10%, 1/4W	EA	1.000	CTS\U201R104B	R12
2780	55612-1501J		RESISTOR, FXO, METAL FILM, 1.5K, 5%, 1/4-1/2W	EA	1.000	TRW\GP55-1501+/-5%	R14
2790	55928		RESISTOR, VARIABLE, COMP, 1K, 10%, 1/4W	EA	1.000	CTS\U201R102B	R15
2800	55612-3300J		RESISTOR, FXO, METAL FILM, 330, 5%, 1/4-1/2W	EA	1.000	TRW\GP55-3300+/-5%	R17
2810	55612-1200J		RESISTOR, FXO, METAL FILM, 120, 5%, 1/4-1/2W	EA	1.000	TRW\GP55-1200+/-5%	R16
3700	60008		INTEGRATED CIRCUIT, LINEAR, OP. AMP.	EA	1.000	RCA\CA3130T	U1
3710	60001		OPTOCOUPLER/ISOLATOR, TRANSISTOR OUTPUT STYLE 1	EA	1.000	MOT\14N27	U2
4000	1N5239B		0100E, ZENER, 3.1V, 5%, 500MW	EA	1.000	NJS\1N5239B	VR1
4010	1N5248B		0100E, ZENER, 18V, 5%, 500MW	EA	1.000	MOT\1N5248B	VR2
4500	73011		SOCKET, I.C., 8 PIN, ROUND	EA	1.000	CIN\81CS	XU1
4510	73009		SOCKET, I.C., 6 PIN	EA	1.000	CAM\703-1306010410	XU2
5000	1001133-101	K	PWB, REGULATOR, MPLV	EA	1.000		1



# NOTES:

1.0 UNLESS OTHERWISE SPECIFIED:  
RESISTOR VALUES ARE OHMS  
RESISTOR RATINGS ARE 1/4 WATT  
CAPACITOR VALUES ARE MICROFARADS

2.0 THIS SCHEMATIC MAY REPRESENT MULTIPLE  
ASSEMBLIES. SEE APPROPRIATE PARTS LIST  
FOR FINAL COMPONENT VALUES.

## REFERENCE DESIGNATIONS

LAST USED	NOT USED
C5 R9	R4, R8
CR4 U1	W1-W5
DS1 VR1	CR3
E19 W7	E12 THRU E18
	C1, C2

ITEM		PART NO.	DESCRIPTION	MATERIAL
QTY. REQD.		PARTS LIST		
UNLESS OTHERWISE SPECIFIED DO NOT SCALE DRAWING. DIMENSIONS ARE IN INCHES AND INCLUDE PLATING THICKNESS. ALL THREADS ARE UNIFIED NATIONAL SERIES, CLASS 2. REMOVE ALL BURRS AND SHARP EDGES. TOLERANCE: ±.010.		DRAWN DWB:66 DATE 19 JUN 78 CHKD DATE 15 AUG 88 MECH DATE 15 NOV 88 ELEC DATE	<b>AMPLIFIER RESEARCH</b> <b>SCHEMATIC DIAG</b> <b>REGULATOR MPLV</b> DWG. NO. 1001098 SHEET 1 OF 1	
USE USED ON MODEL				REV. L

ECN	DATE	REV
1	19 JUN 78	A
2	15 AUG 88	B
3	15 NOV 88	C
4	15 NOV 88	D
5	15 NOV 88	E
6	15 NOV 88	F
7	15 NOV 88	G
8	15 NOV 88	H
9	15 NOV 88	I
10	15 NOV 88	J
11	15 NOV 88	K
12	15 NOV 88	L

09:38:03 14 MAY 1990

AMPLIFIER RESEARCH  
 \* \* \* SINGLE LEVEL BILL OF MATERIAL LISTING \* \* \*

REPORT: E0056

PAGE: 1

 BILL NO: 1002B23-507  
 REGULATOR ASSY

REV: C

U/M: EA

DRAWING NO: ARC\1001097

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	CRCT-OSGN
0010	1001098	L	SCHEMATIC DIAGRAM,REGULATOR ASSY	EA REF		ARC\1001098	
0410	27058		CAP,ELECT,1UF,50V,+/-20%,RADIAL	EA	1.000	PAN\VECEALHU010	C4
0420	27063		CAP,ELECT,10UF,50V,+/-20%,AXIAL	EA	1.000	PAN\VECEBIHU100	C5
0700	1N5401		DIODE,3AMP,100V PIV	EA	2.000	SSM\1N5401	CR1 ,CR2
0710	1N5061		DIODE,RECTIFIER,1.5AMP,600V	EA	1.000	TEL\1N5061	CR4
1000	33002		LED,RED,WIDE-ANGLE,T113mm	EA	1.000	H-P\HLMP-1002	OS1
2700	55612-1801J		RESISTOR,FXO,METAL FILM,1.8K,5%,1/4-1/2W	EA	2.000	TRW\GP55-1801+/-5%	R1 ,R5
2710	55923		RES,VAR,CERMET,MULTITURN,S10E ADJ,100,10%,1/2W	EA	1.000	BOR\3299Z-1-101	R2
2720	55930		RESISTOR,VARIABLE,COMP,10K,10%,1/4W	EA	1.000	CTS\U201R103B	R3
2730	55612-B200J		RESISTOR,FXO,METAL FILM,820,5%,1/4-1/2W	EA	1.000	TRW\GP55-B200+/-5%	R4
2740	55718-R200J		RESISTOR,FXO,VW,0.2,5%,5W	EA	1.000	OHM\B0055	R9
3700	50033		INTEGRATED CIRCUIT,LINEAR,POS.,ADJ.VOLTAGE,2A	EA	1.000	SGS\L200CV	U1
4000	1N5239B		DIODE,ZENER,9.1V,5%,500MW	EA	1.000	NJS\1N5239B	VR1
4200	66047		WIRE,BUSS,TINNEO COPPER,22 AWG	IN	3.000	ALP\9022	W7 ,W8 W9
4200	66139		TUBING,TEFLON,NAT'L CLR,20AWG,.03410,.012WALL THK 1W	A/R		ALP\TFT200 20AWG	W7 ,W8 W9
5000	1001096-101	M	PWB,REGULATOR	EA	1.000	ARC\1001096	
5010	1001099-101	B	BRACKET,MOUNTING,MPLY REGULATOR	EA	1.000	ARC\1001099	
5020	69175		MOUNTING TAB,NAT'L COLOR NYLON,21/32 O/A,3/8 W	EA	1.000	PLM\A-30-167	
5020	77064		COMPOUND,THERMAL JOINT,TYPE 120	EA A/R		WAK\120-S	
7100	11011		SCREW,MACH,PAN H0,CROSS-REC,S/S,4-40 X .38	EA	1.000		
7100	11020		SCREW,MACH,PAN H0,CROSS-REC,S/S,6-32 X .50	EA	4.000		
7100	11064		SCREW,MACH,FLT H0,100 DEG.CROSS-REC,S/S,6-32X.38	EA	1.000		
7300	13003		NUT,HEX,S/S,4-40,.187AF	EA	1.000		

09:38:06 14 MAY 1990

AMPLIFIER RESEARCH  
\* \* \* SINGLE LEVEL BILL OF MATERIAL LISTING \* \* \*

REPORT: E0056

PAGE: 2

BILL NO: 1002823-507  
REGULATOR ASSY

REV: C U/M: EA DRAWING NO: ARC\1001097

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER DRAWING NUMBER	CRCT-OSGN
7300	13004		NUT, HEX, S/S, 6-32, .250AF	EA	5.000	
7500	12000		WASHER, LOCK, INT TOOTH, S/S, #4	EA	1.000	
7500	12001		WASHER, LOCK, INT TOOTH, S/S, #6	EA	5.000	
7500	12010		WASHER, FLAT, S/S, #4, .250 00 x .125 10 x .028 THK	EA	1.000	\MS-15795-803
7500	12011		WASHER, FLAT, S/S, #6, .312 00	EA	5.000	
7500	12024		WASHER, FLAT, 8/ZN PLTG, .312 00 x .164 10 x .125 THK	EA	4.000	\S785-M01-F21-.164

FORM 110 REV 0388

09:38:08 14 MAY 1990

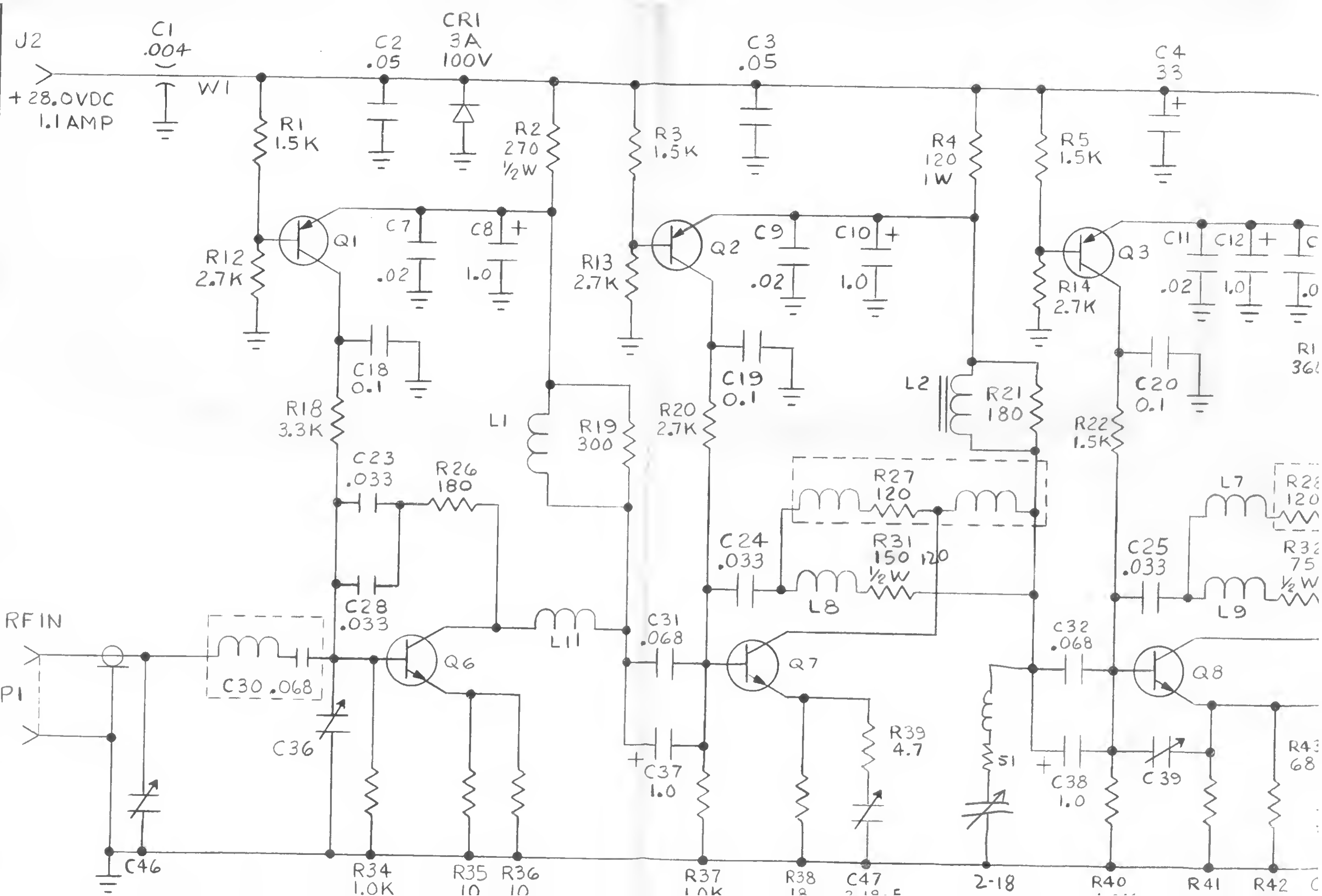
AMPLIFIER RESEARCH  
 \* \* \* SINGLE LEVEL BILL OF MATERIAL LISTING \* \* \*

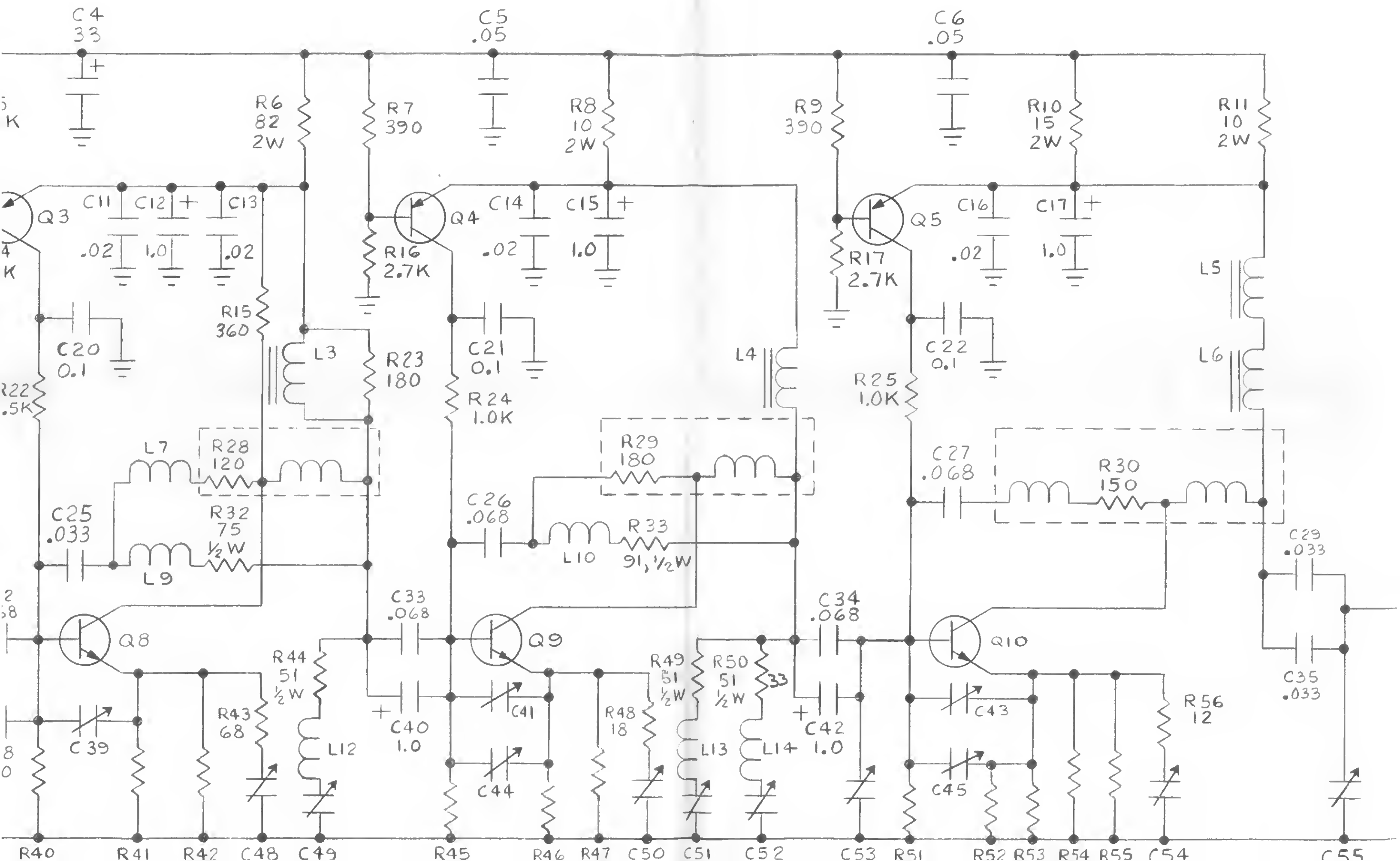
REPORT: E0056 PAGE: 1

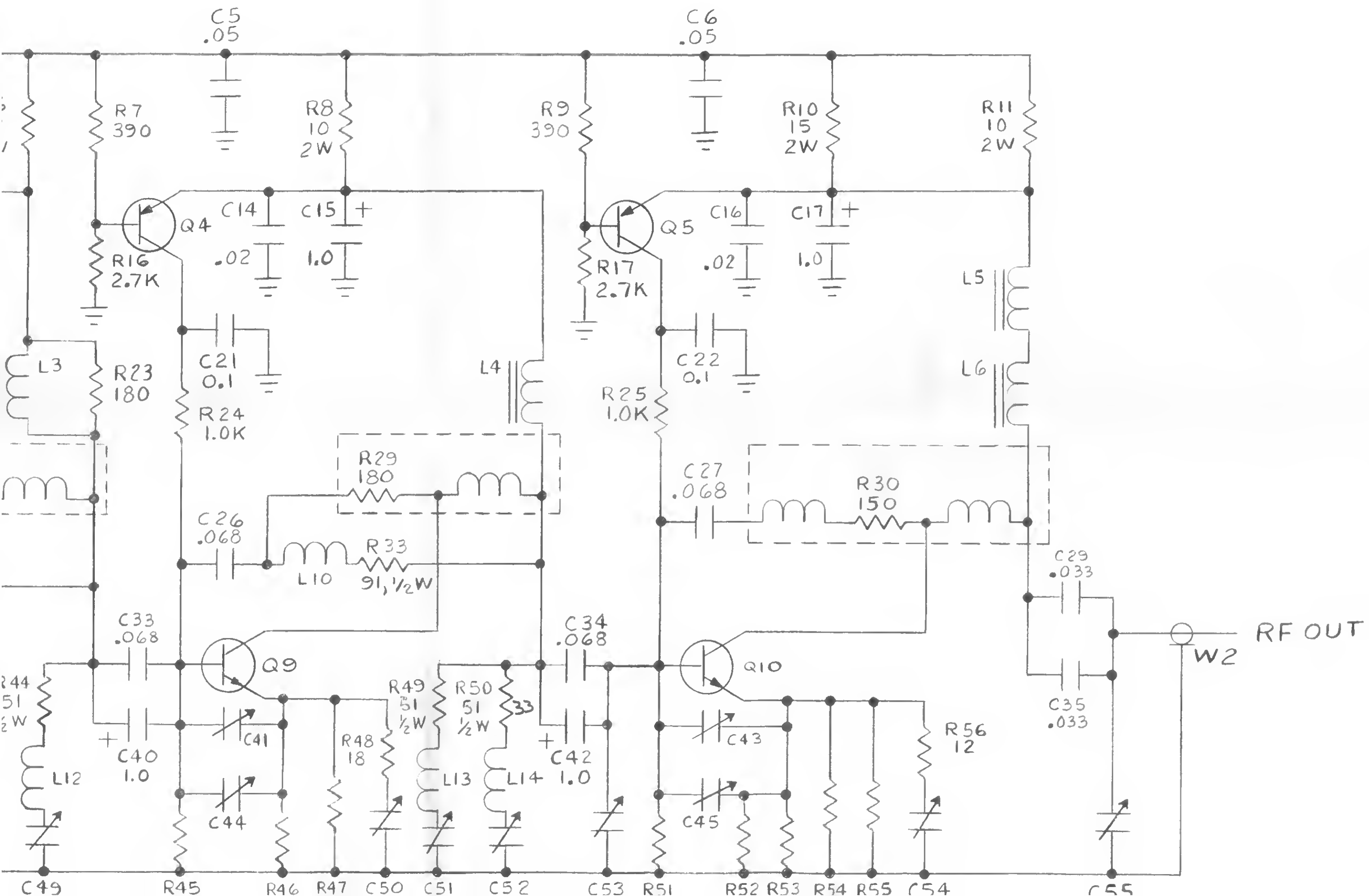
BILL NO: 1001203-501  
 DETECTOR ASSEMBLY

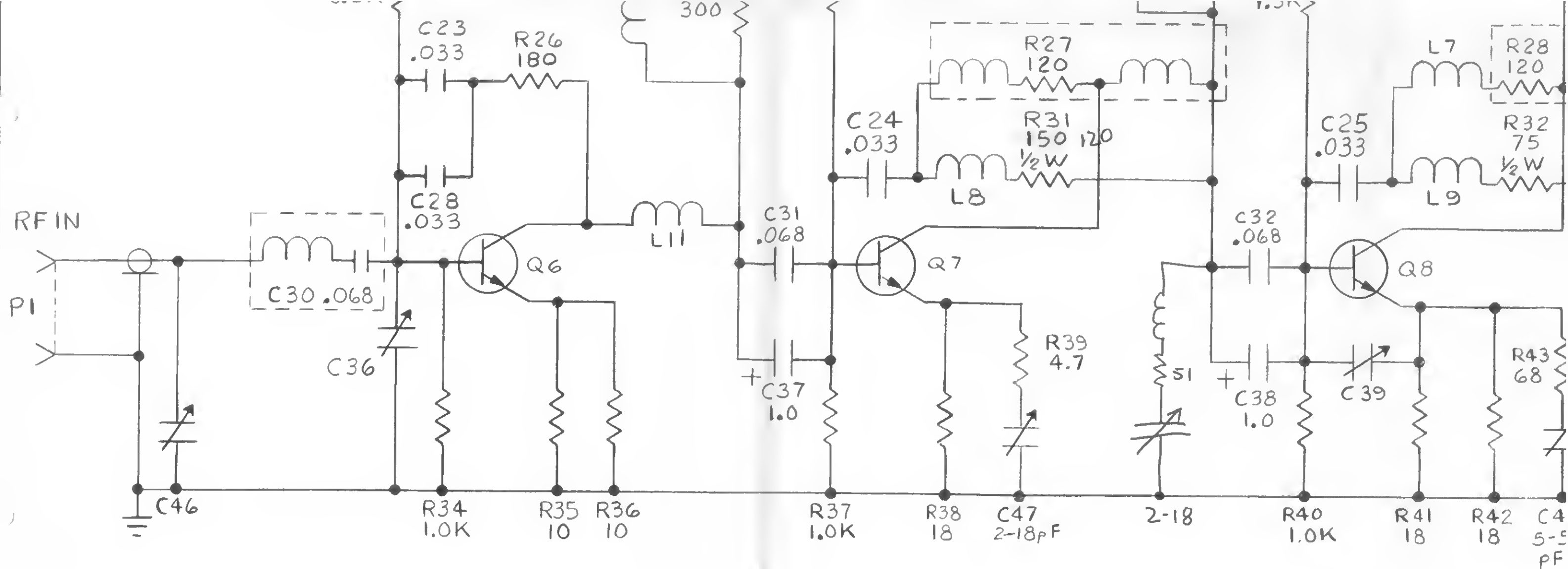
REV: C U/M: EA DRAWING NO: ARC\1001203

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	CRCT-DSGN
0010	1002997	-	SCHEMATIC DIAGRAM, DETECTOR ASSY	EA REF		ARC\1002997	
0400	27097		CAP, FEED-THRU, FILTER, 470PF, 400V	EA	1.000	MET\FA5C-4716MV	C1
0700	30015		0100E, 1N82A, 2V-3V, SELECTED SENSITIVITY	EA	1.000	MW\1N82A	CR1
2200	41013		CONNECTOR, COAX, BNC, PLUG, RG-18BBA/U	EA	1.000	KIN\KC-59-152	P1
2700	55512-51R0J		RESISTOR, FX0, CARBON COMP, 51, 5%, 1/4W	EA	1.000		R1
2710	55612-1000J		RESISTOR, FX0, METAL FILM, 100, 5%, 1/4-1/2	EA	1.000	TRW\GP55-1000+/-5%	R2
4200	66151		WIRE, IRRADIATED, PVC, 26 AWG, SOLID, RED	IN A/R			W1
4200	66152		WIRE, IRRADIATED, PVC, 26 AWG, SOLID, BLACK	IN A/R			W1
4210	20004	-	CABLE ASSY, #22 AWG SHIELDED, 10.0"	EA	1.000	ARC\1002571	W4
5000	1002464-102	-	CAN, MODIFIED	EA	1.000	ARC\1002464	1
5010	80002		COVER, HU5365 CAN	EA	1.000	HUC\HU5365CAST-WT0 2	









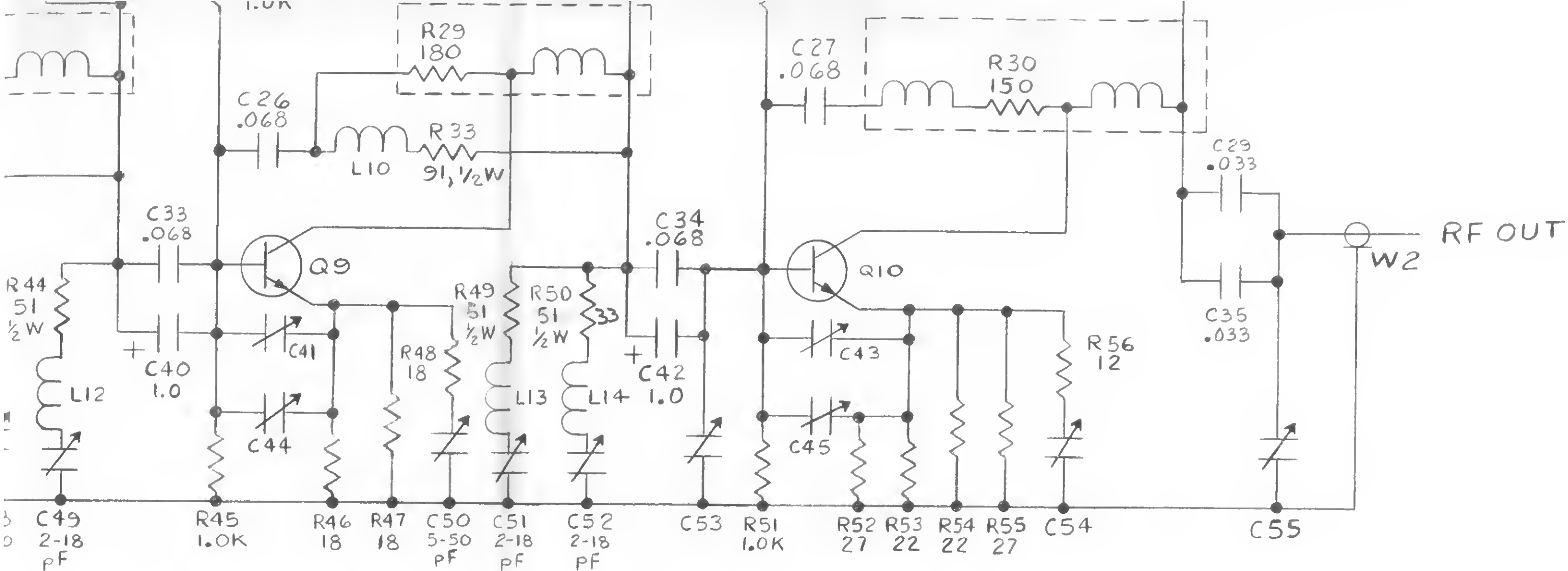
NOTES:

- 1.0 UNLESS OTHERWISE SPECIFIED:  
RESISTOR VALUES ARE OHMS  
RESISTOR RATINGS ARE 1/4 WATT  
CAPACITOR VALUES ARE MICROFARADS  
VARIABLE CAPACITORS ARE 1.5-4PF

- 2.0 THIS SCHEMATIC MAY REPRESENT MULTIPLE  
ASSEMBLIES. SEE APPROPRIATE PARTS LIST  
FOR FINAL COMPONENT VALUES.

REFERENCE	DESIGNATIONS
LAST USED	NOT USED
J2 L18	J1
Q10 CR1	
C55 R56	
W2 P1	





QTY. REQD.		ITEM	PART NO.	DESCRIPTION	MARK	FIN	MATL
			PARTS LIST				
		UNLESS OTHERWISE SPECIFIED DO NOT SCALE DRAWING. DIMENSIONS ARE IN INCHES AND INCLUDE PLATING THICKNESS. ALL THREADS ARE UNIFIED NATIONAL SERIES, CLASS 2. REMOVE ALL BURRS AND SHARP EDGES. TOLERANCE: $\pm .010$ .	DRAWN C. BICKELMAN				
DATE 5 MAR 87							
CHKD			DATE		SCHEMATIC DIAG RF BOARD		
			MECH				
10W1000M7			DATE 8 APR 87		DWG. SCALE		DWG. NO.
USED ON MODEL			ELEC		1003010		REV.
			DATE APRIL 8, 87		SHEET 1 OF 1		

09:38:12 14 MAY 1990

AMPLIFIER RESEARCH  
 ' \* ' SINGLE LEVEL BILL OF MATERIAL LISTING ' \* '

REPORT: E0056 PAGE: 1

 BILL NO: 1003002-501  
 RF ASSY

REV: D U/M: EA DRAWING NO: ARC\1003002

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	CRCT-OSGN
0010	1003010	-	SCHEMATIC DIAGRAM, RF BOARD ASSY	EA	REF		
0100	1003006-501	B	RF BOARD ASSY	EA	1.000	ARC\1003006	A1
0110	1003003-501	-	RF BOARD ASSY	EA	1.000	ARC\1003003	A2
1500	20090	-	CABLE ASSY, COAX, RG-188A/U, BNC, 9.0"	EA	1.000	ARC\1002494	P1
1510	20044	-	CABLE ASSY, COAX, RG-188A/U, 5.5	EA	1.000	ARC\1002571	W2
5000	1000964-301	P	HEAT SINK	EA	1.000	ARC\1000964	4
5010	1000966-101	K	SHIELD	EA	4.000	ARC\1000966	6
5010	1000966-102	K	SHIELD	EA	1.000	ARC\1000966	7
5010	1000966-103	F	SHIELD	EA	1.000	ARC\1000966	8
5020	77064		COMPOUND, THERMAL JOINT, TYPE 120	EA	A/R	WAK\120-S	9
5030	69162		CABLE TIES, 7/8" MAX BUNOLE DIA, 4" L	EA	1.000	OEN\08432	10
7100	11018		SCREW, MACH, PAN H0, CROSS-REC, ZN, 6-32 X .38, TYPE SW	EA	66.000		1
7110	11011		SCREW, MACH, PAN H0, CROSS-REC, S/S, 4-40 X .38	EA	2.000		2
7500	12022		WASHER, FLAT, 8/21NC PLTG, .312 00 X .164 10 X .060	EA	8.000	UNC\5-781-M01F05AG	3
7500	12023		WASHER, FLAT, 8/21NC PLTG, .312 00 X .141 10 X .093 THK	EA	28.000	UNC\5-783-M01F05AG	5

09:38:16 14 MAY 1990

AMPLIFIER RESEARCH  
\* \* \* SINGLE LEVEL BILL OF MATERIAL LISTING \* \* \*

REPORT: E0056 PAGE: 1

BILL NO: 1003006-501  
RF BOARD ASSY

REV: B U/M: EA DRAWING NO: ARC\1003006

SEQ	PART NUMBER	REV	DESCRIPTION	U/M	QUANTITY-PER DRAWING NUMBER	CRCT-DSGN
5000	1003007-501	E	PWB ASSY,RF	EA	1.000 ARC\1003006	
5000	1003008-501	B	RF COMPONENT KIT	EA	1.000 ARC\1003006	

09:38:25 14 MAY 1990

AMPLIFIER RESEARCH  
 \* \* \* SINGLE LEVEL BILL OF MATERIAL LISTING \* \* \*

REPORT: E0056

PAGE: 1

 BILL NO: 1003007-501  
 PW8 ASSY, RF

REV: E

U/M: EA

DRAWING NO: ARC\1003006

SEQ	PART NUMBER	REV	DESCRIPTION	U/M	QUANTITY-RER	DRAWING NUMBER	CRCT-OSGN
0400	27198		CAR, CERAMIC, 0.1MF, +80-20%, 100V, CHAR. Z5U	EA	6.000	MPC\EF104Z	C2 ,C3 C5 ,C6 C14 ,C16
0410	27051		CAR, TANT, 33UF, 35V0C	EA	1.000	MAL\TC336K035WLG	C4
0420	27192		CAR, CERAMIC, .022MF, 20%, 25V, CHAR. 15T	EA	4.000	MUE\CA223M	C7 ,C9 C11 ,C13
0430	27047		CAR, TANT, 1UF, 50V	EA	9.000	MAL\TC105M050WLE	C8 ,C10 C12 ,C15 C17 ,C37 C38 ,C40 C42
0440	27196		CAP, CERAMIC, 0.1MF, 20%, 25V, CHAR. 15T	EA	5.000	MUE\CA-104M	C18 ,C19 C20 ,C21 C22
0450	27045		CAR, CERAMIC, .033UF, 100V0C	EA	6.000	TCC\UEZ333M1	C23 ,C24 C25 ,C28 C29 ,C35
0460	27046		CAR, CERAMIC, .068UF, 100V	EA	7.000	VIT\VP328Y683KB	C26 ,C27 C30 ,C31 C32 ,C33 C34
0470	27125		CAR, VARIABLE, CERAMIC, NPO, 1.5-4RF, 250V	EA	5.000	JOE\9371	C36 ,C46 C53 ,C54 C55
0480	27128		CAR, VARIABLE, 2-18PF, 250V	EA	4.000		C47 ,C49 C51 ,C52
0490	27129		CAP, VARIABLE, 5-50PF, 250V	EA	2.000	MER\2810C5R5500H	C48 ,C50
0700	1N5401		DIODE, 3AMP, 100V PIV	EA	1.000	SSM\1N5401	CR1
1800	49112	-	INDUCTOR, AIR, WOUND, 012-03-05R0-A03-22-2	EA	1.000	ARC\1002503	L1
1805	49000	-	INDUCTOR, CORE, 023-623A1-10-26-2-1	EA	2.000	ARC\1002497	L2 ,L3
1810	49001	-	INDUCTOR, CORE, 023-612A1-09-26-2-1	EA	2.000	ARC\1002803	L4 ,L6
1820	49002	-	INDUCTOR, CORE, 023-605A1-32-26-2-1	EA	1.000	ARC\1002803	L5
1850	49006	-	INDUCTOR, AIR, WOUND, 012-04-04R0-A03-26-2	EA	2.000	ARC\1002503	L8 ,L10

09:38:29 14 MAY 1990

AMPLIFIER RESEARCH  
 \* \* \* SINGLE LEVEL BILL OF MATERIAL LISTING \* \* \*

REPORT: EG056 PAGE: 2

 BILL NO: 1003007-501  
 PWB ASSY.RF

REV: E U/M: EA DRAWING NO: ARC\1003006

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER DRAWING NUMBER	CRCT-OSGN
1860	49007	-	INDUCTOR,AIR,WOUND,012-04-05R0-A03-26-2	EA	1.000 ARC\1002503	L9
1865	49005	-	INDUCTOR,AIR,WOUND,012-04-02R0-A03-22-2	EA	1.000 ARC\1002503	L12
1870	49008	-	INDUCTOR,AIR,WOUND,012-04-03R0-A03-26-2	EA	2.000 ARC\1002503	L13 ,L14
2500	2N3906		TRANSISTOR,SWITCHING,PNP,40V,0.2A,1W	EA	5.000 ARE\2N3906	01 ,02 03 ,04 05
2700	55612-1501J		RESISTOR,FXO,METAL FILM,1.5K,5%,1/4-1/2W	EA	4.000 TRW\GP55-1501+/-5%	R1 ,R3 R5 ,R22
2710	55612-2700J		RESISTOR,FXO,METAL FILM,270,5%,1/4-1/2W	EA	1.000 TRW\GP55-2700+/-5%	R2
2720	55514-1200J		RESISTOR,FXO,CARBON COMP,120,5%,1W	EA	1.000 A-B\GB1215	R4
2730	55515-82R0J		RESISTOR,FXO,CARBON COMP,82,5%,2W	EA	1.000 A-B\HBB205	R6
2740	55612-3900J		RESISTOR,FXO,METAL FILM,390,5%,1/4-1/2W	EA	2.000 TRW\GP55-3900+/-5%	R7 ,R9
2750	55515-10R0J		RESISTOR,FXO,CARBON COMP,10,5%,2W	EA	1.000 A-B\HB1005	R8
2760	55515-15R0J		RESISTOR,FXO,CARBON COMP,15,5%,2W	EA	1.000 A-B\15 OHM,5%,2W	R10
2765	55515-12R0J		RESISTOR,FXO,CARBON COMP,12,5%,2W	EA	1.000 A-B\HB1205	R11
2770	55612-2701J		RESISTOR,FXO,METAL FILM,2.7K,5%,1/4-1/2W	EA	6.000 TRW\GP55-2701+/-5%	R12 ,R13 R14 ,R16 R17 ,R20
2790	55612-3301J		RESISTOR,FXO,METAL FILM,3.3K,5%,1/4-1/2W	EA	1.000 TRW\GP55-3301+/-5%	R18
2800	55612-3000J		RESISTOR,FXO,METAL FILM,300,5%,1/4-1/2W	EA	1.000 TRW\GP55-3000+/-5%	R19
2810	55612-1800J		RESISTOR,FXO,METAL FILM,180,5%,1/4-1/2W	EA	2.000 TRW\GP55-1800+/-5%	R21 ,R23
2820	55612-1001J		RESISTOR,FXO,METAL FILM,1K,5%,1/4-1/2W	EA	7.000 TRW\GP55-1001+/-5%	R24 ,R25 R34 ,R37 R40 ,R45 R51
2830	55612-1500J		RESISTOR,FXO,METAL FILM,150,5%,1/4-1/2W	EA	1.000 TRW\GP55-1501+/-5%	R31
2840	55612-75R0J		RESISTOR,FXO,METAL FILM,75,5%,1/4-1/2W	EA	1.000 TRW\GP55-75R0+/-5%	R32
2850	55612-91R0J		RESISTOR,FXO,METAL FILM,91,5%,1/4-1/2W	EA	1.000 TRW\GP55-91R0+/-5%	R33

## AMPLIFIER RESEARCH

09:38:34 14 MAY 1990

\* \* \* SINGLE LEVEL BILL OF MATERIAL LISTING \* \* \*

REPORT: E0056

PAGE: 3

BILL NO: 1003007-501  
PWB ASSY,RF

REV: E

U/M: EA

DRAWING NO: ARC\1003006

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER DRAWING NUMBER	CRCT-DSGN
2860	55512-10R0J		RESISTOR,FXD,CARBON COMP,10,5%,1/4W	EA	2.000 A-B\CB1005	R35 ,R36
2870	55512-18R0J		RESISTOR,FXD,CARBON COMP,18,5%,1/4W	EA	4.000 A-B\CB1805	R38 ,R41 R42 ,R48
2880	55512-4R70J		RESISTOR,FXD,CARBON COMP,4.7,5%,1/4W	EA	1.000 A-B\CB4765	R39
2890	55512-6R80J		RESISTOR,FXD,CARBON COMP,6.8,5%,1/4W	EA	1.000 A-B\CB6865	R43
2900	55513-51R0J		RESISTOR,FXD,CARBON COMP51,5%,1/2W	EA	3.000	R44 ,R49 R50
2910	55512-36R0J		RESISTOR,FXD,CARBON COMP,36,5%,1/4W	EA	10.000 A-B\CN3605	R46 ,R47 R52 ,R53 R54 ,R55 R57 ,R58 R59 ,R60
2920	55512-12R0J		RESISTOR,FXD,CARBON COMP,12,5%,1/4W	EA	1.000 A-B\CB1205	R56
4200	66047		WIRE,BUSS,TINNED COPPER,22 AWG	IN	5.000 ALP\9022	W1 ,2
4200	66139		TUBING,TEFLON,HAT'L CLR,20AWG,.034ID,.012WALL THK IN A/R		ALP\TFT200 20AWG	W1
5000	1000866-101	C	PWB,RF BOARD	EA	1.000 ARC\1000866	1

09:38:39 14 MAY 1990

AMPLIFIER RESEARCH  
 \* \* \* SINGLE LEVEL BILL OF MATERIAL LISTING \* \* \*

REPORT: E0056

PAGE: 1

BILL NO: I003008-501  
 RF COMPONENT KIT

REV: B U/M: EA DRAWING NO: ARC\1003006

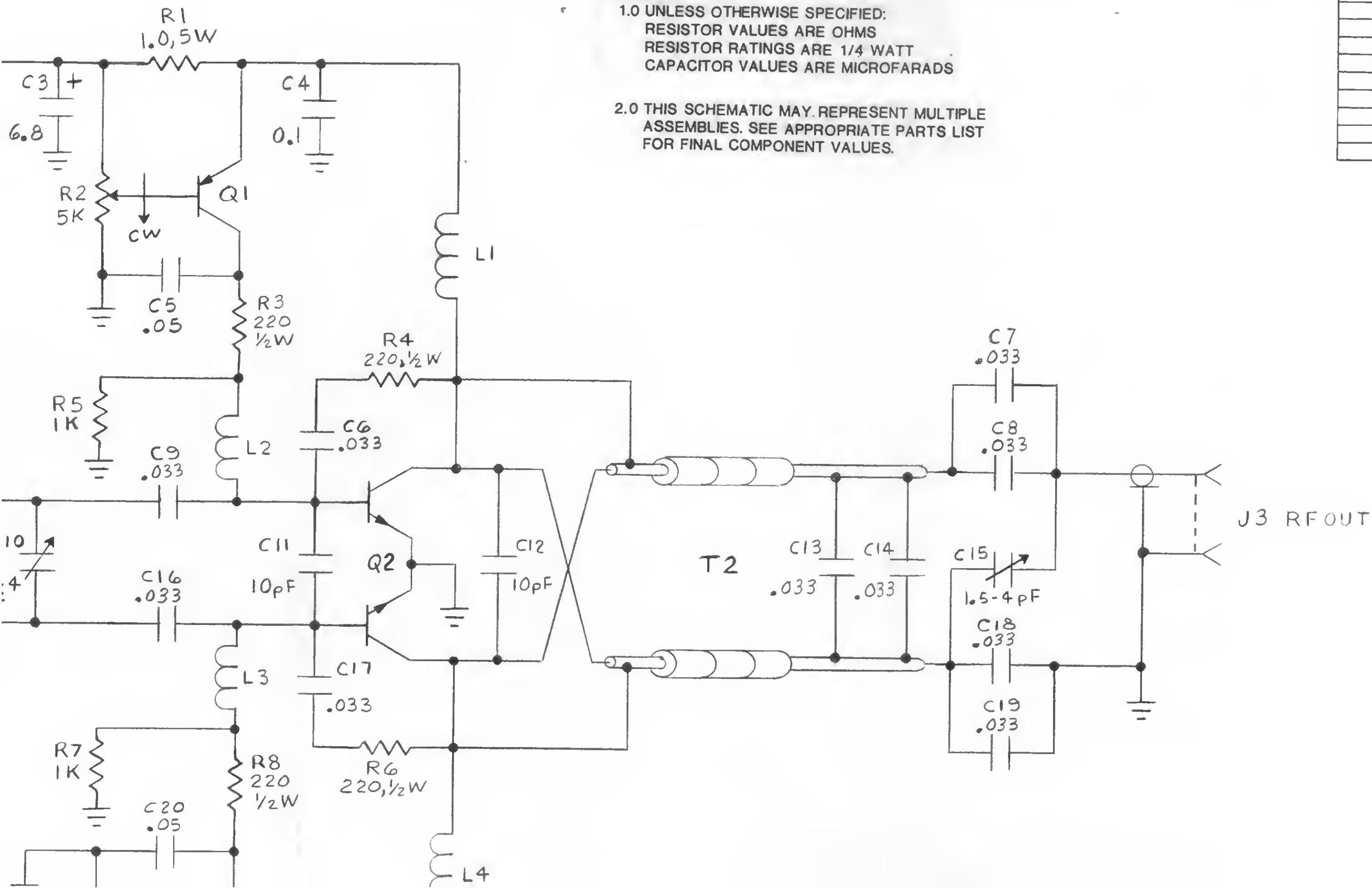
SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	CRCT-DSGN
0400	27100		CAP,FEED-THRU,FILTER,.004UF,500V	EA	1.000	T\S\FR3-50	C1
0410	27125		CAP,VARIABLE,CERAMIC,NPO,1.5-4PF,250V	EA	5.000	JDE\937I	C39 ,C41 C43 ,C44 C45
1500	41110		SOCKET,PIN,.040 PIN-THRU HOLE	EA	1.000	CON\09-9002-1-04	J2
1800	49003	-	INDUCTOR,AIR,WOUND,012-02-02R0-803-26-2	EA	1.000	ARC\1002503	L7
1810	77103		STRIP,COPPER,.125 W X .008 THK	IN	0.500		L11
2500	1000034-125	AF	TRANSISTOR,RF,HI POWER	EA	1.000	ARC\1000034	Q6
2510	1000034-158	AL	TRANSISTOR,RF,.370,8-32 STUO	EA	2.000	ARC\1000034	Q7 ,Q8
2520	1000034-130	AL	TRANSISTOR,RF,HI POWER	EA	1.000	ARC\1000034	Q9
2530	1000034-137	AL	TRANSISTOR,RF,HI POWER	EA	1.000	ARC\1000034	Q10
2700	55612-3600J		RESISTOR,F%0,METAL FILM,360,5%,1/4-1/2W	EA	1.000	TRW\GP55-3600+/-5% R15	
2710	55612-1200J		RESISTOR,F%0,METAL FILM,120,5%,1/4-1/2W	EA	2.000	TRW\GP55-1200+/-5% R27	,R28
2710	55612-1800J		RESISTOR,F%0,METAL FILM,180,5%,1/4-1/2W	EA	2.000	TRW\GP55-1800+/-5% R26	,R29
2720	55612-1500J		RESISTOR,F%0,METAL FILM,150,5%,1/4-1/2W	EA	1.000	TRW\GP55-1501+/-5% R30	

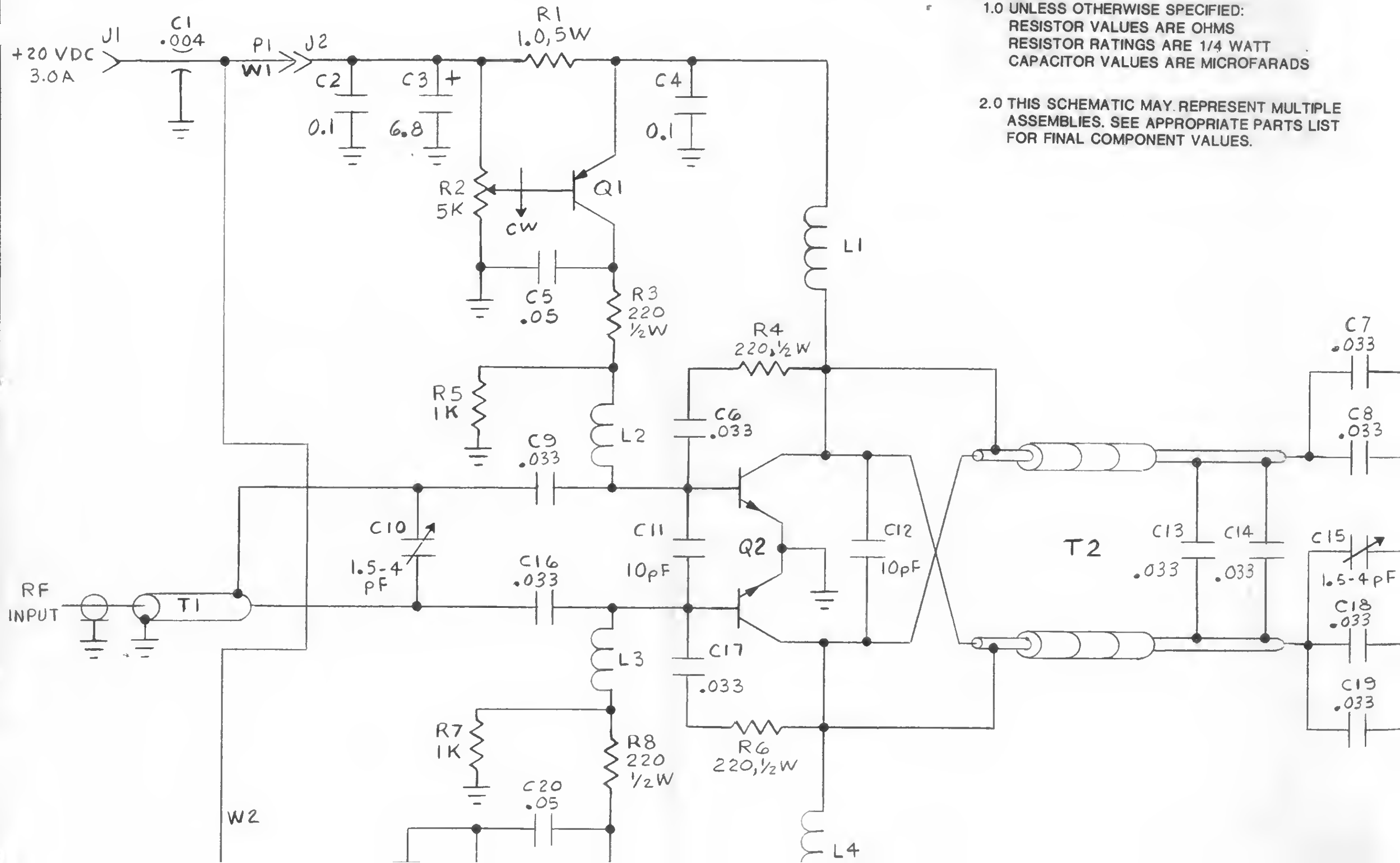
[illegible]

NOTES:

1.0 UNLESS OTHERWISE SPECIFIED:  
RESISTOR VALUES ARE OHMS  
RESISTOR RATINGS ARE 1/4 WATT  
CAPACITOR VALUES ARE MICROFARADS

2.0 THIS SCHEMATIC MAY REPRESENT MULTIPLE ASSEMBLIES. SEE APPROPRIATE PARTS LIST FOR FINAL COMPONENT VALUES.

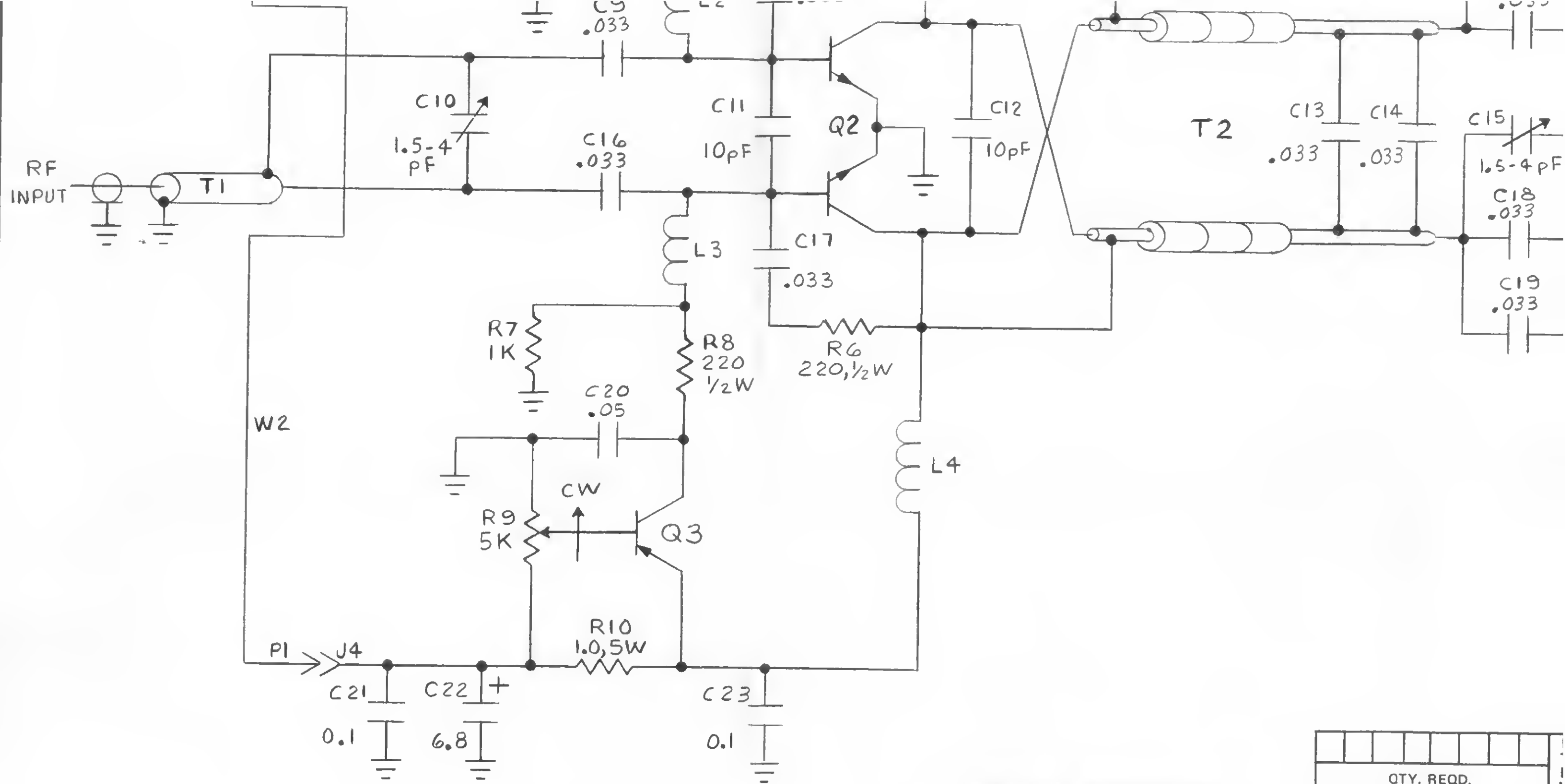




# NOTES:

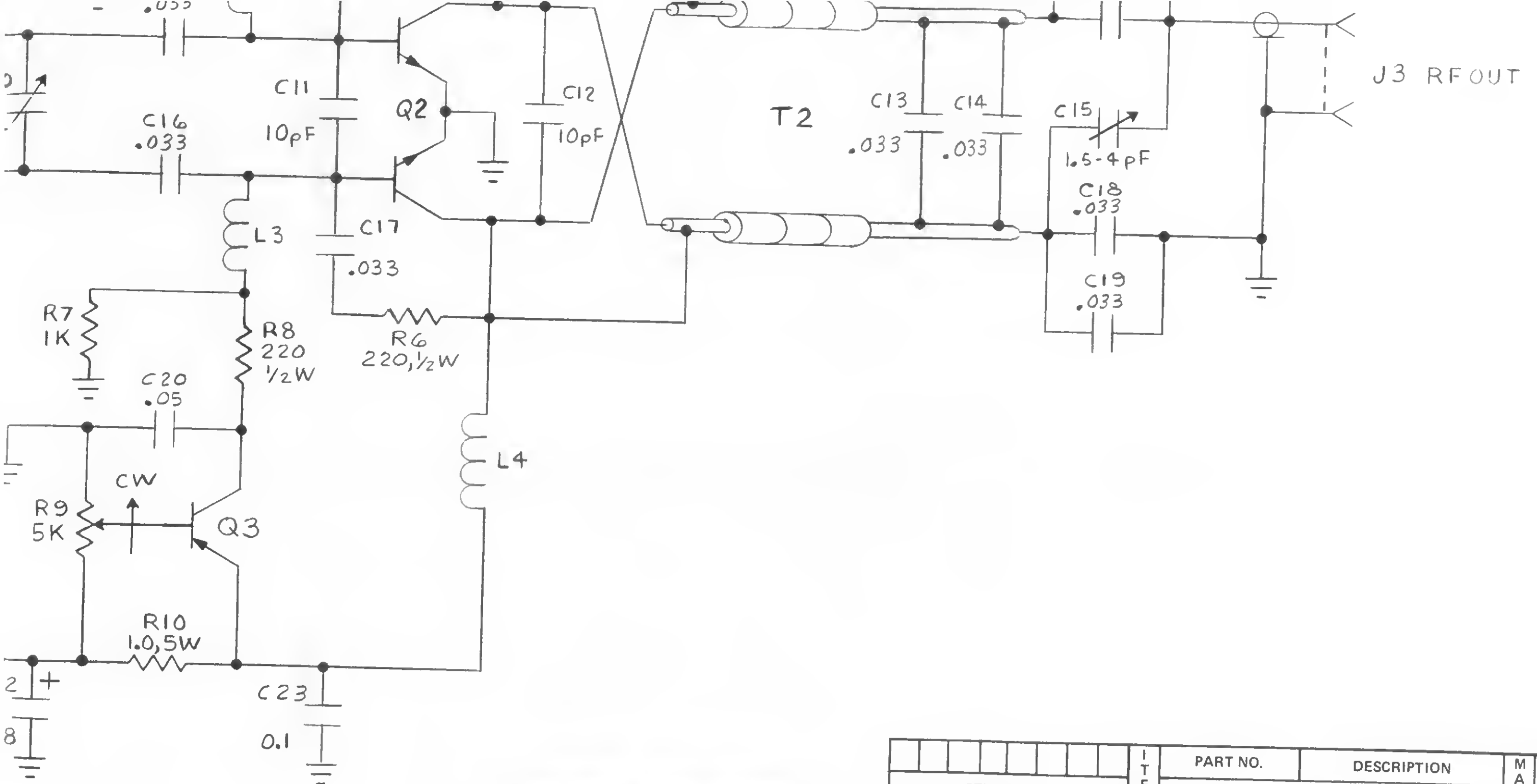
1.0 UNLESS OTHERWISE SPECIFIED:  
 RESISTOR VALUES ARE OHMS  
 RESISTOR RATINGS ARE 1/4 WATT  
 CAPACITOR VALUES ARE MICROFARADS

2.0 THIS SCHEMATIC MAY REPRESENT MULTIPLE  
 ASSEMBLIES. SEE APPROPRIATE PARTS LIST  
 FOR FINAL COMPONENT VALUES.



REFERENCE LAST USED	DESIGNATIONS NOT USED
L4	C23
J4	R10
Q3	T2
P1	W2

QTY. REQD.									
UNLESS OTHERWISE SPECIFIED DO NOT SCALE DRAWING.									
DIMENSIONS ARE IN INCHES AND INCLUDE PLATING THICKNESS.									
ALL THREADS ARE UNIFIED NATIONAL SERIES, CLASS 2.									
REMOVE ALL BURRS AND SHARP EDGES.									
TOLERANCE: ±.010.									
10W1000M7									
USED ON MODEL									



REFERENCE DESIGNATIONS  
LAST USED NOT USED  
L4 C23  
J4 R10  
Q3 T2  
P1 W2

QTY. REQD.		ITEM	PART NO.	DESCRIPTION	MARK	FIN	MATL
			PARTS LIST				
UNLESS OTHERWISE SPECIFIED DO NOT SCALE DRAWING. DIMENSIONS ARE IN INCHES AND INCLUDE PLATING THICKNESS. ALL THREADS ARE UNIFIED NATIONAL SERIES, CLASS 2. REMOVE ALL BURRS AND SHARP EDGES. TOLERANCE: $\pm .010$ .			DRAWN C. BICKELMAN				
			DATE 5 MAR 87				
			CHKD		<b>SCHEMATIC DIAG</b> <b>RF BOARD</b>		
			DATE 8 APR 87				
MECH		DATE 8 APR 87		DWG. SCALE DWG. NO. <b>1003009</b>			
ELEC		DATE 4/8/87					
10W1000M7 USED ON MODEL				SHEET 1 OF 1		REV. -	

# AMPLIFIER RESEARCH

09:38:41 14 MAY 1990

\* \* \* SINGLE LEVEL BILL OF MATERIAL LISTING \* \* \*

REPORT: E0056

PAGE: 1

BILL NO: 1003003-501  
RF BOARD ASSY

REV: -

U/M: EA

DRAWING NO: ARC\1003003

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER DRAWING NUMBER	CRCT-DSGN
0010	1003009	-	SCHEMATIC DIAGRAM,RF BOARD ASSY	EA	REF	
5000	1003004-501	B	PWB ASSY,RF	EA	1.000	
5000	1003005-501	A	RF COMPONENT KIT	EA	1.000	

11:07:31 14 MAY 1990

AMPLIFIER RESEARCH  
\* \* \* SINGLE LEVEL BILL OF MATERIAL LISTING \* \* \*

REPORT: E0056

PAGE: 1

BILL NO: 1003004-501  
PWB ASSY, RF

REV: B

U/M: EA

DRAWING NO:

SEQ	PART NUMBER	REV	DESCRIPTION	U/M	QUANTITY-PER	DRAWING NUMBER	CRCT-OSGN
0400	27196		CAP, CERAMIC, 0.1MF, 20%, 25V, CHAR. Y5T	EA	4.000	MUE\CA-104M	C2 ,C4 C21 ,C23
0410	27055		CAP, TANT, 6.8UF, 50V	EA	2.000	MAL\TC685K050NLF	C3 ,C22
0420	27195		CAP, CERAMIC, 0.05UF, 20%, 25V, CHAR. Y5T	EA	2.000	MUE\CA503M	C5 ,C20
0430	27045		CAP, CERAMIC, .033UF, 100VOC	EA	6.000	TCC\UEZ333MI	C7 ,C8 C13 ,C14 C18 ,C19
0440	27046		CAP, CERAMIC, .068UF, 100V	EA	2.000	VIT\VP328Y6B3KB	C9 ,C16
0450	27125		CAP, VARIABLE, CERAMIC, NP0, 1.5-4PF, 250V	EA	2.000	JOE\9371	C10 ,C15
0460	27029		CAP, CHIP, 10PF, 10%, 500V	EA	1.000	OIL\C17AH100K4TXL	C11
1500	20006	-	CABLE ASSY, COAX, RG-142B/U, N, 10.0	EA	1.000	ARC\1002494	J3
1510	41110		SOCKET, PIN, .040 PIN-THRU HOLE	EA	2.000	CON\09-9002-1-04	J2 ,J4
1800	49161	-	INDUCTOR, AIR, WOUND, 012-03-07R0-A04-22-2	EA	4.000	ARC\1002503	L1 ,L2 L3 ,L4
2500	54506		TRANSISTOR, SWITCHING, PNP, 40V, 2A, 10W	EA	2.000	MOT\MP5-U51A	Q1 ,Q3
2700	55718-1R00J		RESISTOR, FXO, WW, 1.0, 5%, 5W	EA	2.000	OHM\4530\95J1R0	R1 ,R10
2710	5591B		RES, VAR, CERMET, MULTITURN, TOP A0J, 5K, 10%, 1W	EA	2.000	MEP\8024EKW502	R2 ,R9
2720	55612-2200J		RESISTOR, FXO, METAL FILM, 220, 5%, 1/4-1/2W	EA	2.000	TRW\GP55-2200+/-5%	R3 ,RB
2730	55612-1001J		RESISTOR, FXO, METAL FILM, 1K, 5%, 1/4-1/2W	EA	2.000	TRW\GP55-1001+/-5%	R5 ,R7
3200	1000643-402	C	CORE, FERRITE, BEAD, CM05005	EA	12.000	ARC\I000643	T1 ,T2
3210	66094		WIRE, MICRO COAX, 50 OHM, COPPER JCKT, PTFE-FEP DIE. MT IN	A/R		COM\UT47	T1
3220	66104		WIRE, COAX, SEMI-RIGID, 25 OHM	IN A/R		COM\OE25038	T2
5000	1002120-101	-	PWB, RF BOARD	EA	1.000	ARC\1002120	1
5010	66122		TUBING, SHRINKABLE, BLACK, 1.00 EAP, .500 REC	IN A/R		REM\FIT-221 1"EXP	

\* \* \* END OF REPORT E0056 - 11:07:34 14 MAY 1990 \* \* \*

09:38:43 14 MAY 1990

AMPLIFIER RESEARCH  
 \* \* \* SINGLE LEVEL BILL OF MATERIAL LISTING \* \* \*

REPORT: E0056

PAGE: 1

BILL NO: 1003005-501  
 RF COMPONENT KIT

REV: A

U/M: EA

DRAWING NO:

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	CRCT-DSGN
0400	27100		CAP, FEED-THRU, FILTER, .004UF, 500V	EA	1.000	TXS\FR3-50	C1
0410	27045		CAP, CERAMIC, .033UF, 100VDC	EA	2.000	TCC\UEZ333M1	C6 ,C17
0420	27029		CAP, CHIP, 10PF, 10%, 500V	EA	1.000	OIL\C17AH100K4TXL	C12
1500	41110		SOCKET, PIN, .040 PIN-THRU HOLE	EA	1.000	CON\09-9002-1-04	J1
2500	1000034-150	AL	TRANSISTOR, RF, HI POWER, BALANCED	EA	1.000	ARC\1000034	Q2
2700	55612-2200J		RESISTOR, FXD, METAL FILM, 220, 5%, 1/4-1/2W	EA	2.000	TRW\GP55-2200+/-5%	R4 ,R6
5000	20043	-	CABLE ASSY, 22 AWG, PIN, 5.0	EA	2.000	ARC\1002575	W1 ,W2

\* \* \* END OF REPORT E0056 - 09:38:45 14 MAY 1990 \* \* \*



160 School House Road, Souderton, PA 18964-9990 USA  
TEL 215-723-8181 • TWX 510-661-6094 • FAX 215-723-5688

---

WARRANTIES:    LIMITATION OF LIABILITY

Seller warrants (i) that seller has title to the goods sold and (ii) that the goods will be free from defects in material and workmanship for a period of one (1) year from date of shipment shown on Amplifier Research invoice. Seller's sole responsibility in fulfilling these warranties shall be to repair or replace any goods which do not conform to the foregoing warranties or, at seller's option, to give buyer credit for defective goods. Warranty service will be provided only for defective goods which are returned within the warranty period, freight costs prepaid, to Amplifier Research or its designated repair facility.

**THERE ARE NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS. SELLER SHALL NOT BE RESPONSIBLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING FROM ANY BREACH OF WARRANTY.**

No person other than an officer of Amplifier Research Corporation, has any authority to bind seller to any affirmation, representation or warranty except as specifically included in the preceding terms and conditions.

MODEL NO. 10W1000M7  
 SERIAL NO. 10359  
 TESTED BY J. A. V.  
 DATE 7/26/90

TEST DATA SHEET

FREQ (MHz)	POWER OUTPUT @ 1dB COMPRESSION (WATTS)	POWER OUTPUT SATURATED (WATTS) @ $\pm$ dBm INPUT
.1	—	—
.2	—	—
.5	—	—
1	—	—
5	—	—
10	—	—
50	—	—
100	> 12.7	12.7 +2 dBm
200	> 14.5	14.5 +2
300	> 16.3	16.3 +2
400	> 13.9	13.9 +2
500	> 12.8	12.8 +2
600	11.8	13.4 +2
700	> 12.3	12.3 +2
800	> 10.3	10.3 +2
900	> 10.4	10.4 +2
1000	8.1	10.7 +2

GAIN 46 dB @ 4.3 WATTS OUTPUT @ 500MHz

FLATNESS  $\pm$  1.5 dB

DISTORTION -20 dBc Max

OPEN TEST ✓ OK

INPUT VSWR 2.0 : 1.0

SHORT TEST ✓ OK

OUTPUT VSWR —

STABILITY ✓ OK

REMOTE CONTROL OPERATION N/A (✓)

10W1000M7

S/N 10359

1000892  
REV0989